BRITISH MEDICAL JOURNAL

LONDON SATURDAY APRIL 22 1939

MODERN PRINCIPLES OF TREATMENT IN BRONCHIECTASIS*

BASED UPON 199 CASES TREATED BY LOBECTOMY OR TOTAL PNEUMONECTOMY

BY

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(WITH SPECIAL PLATE)

The treatment of bronchiectasis has provided for many years a baffling problem in therapeusis, and only comparatively recently has a determined attempt been made to obtain a satisfactory solution. It is essential in any such problem to evaluate the natural history of the disease and thus determine the prognosis, a subject which in the past has received insufficient consideration. The literature lacks any large series of cases which have been followed up for a considerable number of years, and although bronchiectasis is now considered to be a progressive disease, sufficient evidence to provide undoubted proof is lacking. By such investigation it may be possible to prove that certain types of bronchiectasis are progressive, whereas other types may remain stationary for long periods or even retrogress. It is definitely recognized that in bronchiectasis following prolonged retention of a foreign body, which has subsequently been coughed up or removed, or following the obstruction caused by a benign tumour, which after removal has left no narrowing of the bronchial lumen, the disease often becomes progressively worse.

A considerable proportion of young adults with established bronchiectasis give a history of persistent cough or recurrent attacks of pneumonia in the same lobe since infancy. As the first symptoms have arisen subsequent to pulmonary infections during an attack of measles or whooping-cough these two diseases are often mentioned as the inducing factors. There is another possibility in that a non-infected condition of congenital atelectasis and bronchiectasis may have been present before the infection in the lung occurs, and it is only when the infective factor is superimposed that symptoms arise. McCordoch (1932), however, has demonstrated the presence of intranuclear inclusion bodies in the lung in whooping-cough, and holds the opinion that the associated interstitial bronchopneumonia is due to a filterable virus with secondary bacterial infection and that the destruction of the bronchial wall in such cases predisposes to the development of bronchiectasis.

The more regular radiological examination of children with chest disease has shown a considerable number to be suffering from lobar atelectasis with retention of secretions which would formerly be diagnosed as lobar pneumonia. In children lobar atelectasis is usually associated with dilatation of the bronchi of the lobe, and when the lung re-expands the size of the bronchi returns to normal. In some cases this condition of atelectasis and bronchial dilatation may intermit on several occasions with normal bronchograms when the lobe is again expanded. Such cases are, however, not examples of true bronchiectasis, and it is improbable that the elastic tissue in the bronchial walls is affected.

There are many points in favour of the congenital origin of certain cases of bronchiectasis, but this is not the occasion to digress into the narrower paths of the pathology of the disease. Persistent atelectasis will produce bronchiectasis, which becomes permanent and progressive after infection is superimposed. The wider recognition of congenital cystic disease of the lung of the multiple or single cyst type is of considerable importance. In the absence of a spontaneous pneumothorax or infection the condition may pass unrecognized for many years, except in the giant cysts which often cause dyspnoea and occasionally are associated with retarded development of the child. Two groups of statistics determining the prognosis in bronchiectasis provide some positive evidence.

Prognosis in Bronchiectasis

In discussing the prognosis in bronchiectasis in childhood Findlay and Graham in 1927 expressed doubt regarding the correctness of the then prevalent view that the condition was spontaneously curable.

It had been held that the bronchial dilatation ceases to increase, and as the lung increases in size the relative size of the bronchi to lung becomes normal. In a further communication by these authors (Findlay and Graham, 1931) their view was confirmed by the results of an investigation of thirty-two definite examples of bronchiectasis over a period of three to six years. Twelve of these had died, four following attempts at drainage of lung cavities or attempted excision of lung and one from a coincident tuberculous meningitis. The average duration of life after the inception of the disease in the remaining seven fatal cases was 2.63 years. Of those still alive fourteen had been under continuous observation for periods varying between three and six years. From a review of these cases there were three children in whom a previous bronchiectatic condition would seem to have become normal. By the appearance of the bronchograms even this is open to some doubt, as, at any rate in one, the condition would probably be termed to-day a congenital cystic condition, and the last bronchogram fails to show an adequate filling. In three cases the lesion appeared to be more or less stationary, whereas in eight cases the condition had steadily deteriorated. In their summary Findlay and Graham conclude that the prognosis in bronchiectasis in childhood is grave; the condition

* The Harveian Lecture, delivered before the Harveian Society of London on March 9, 1939.

usually steadily gets worse and leads to a fatal termination, but recovery is more probable in those who develop the disease during later childhood.

Roles and Todd (1933) threw considerable light on this question in adults. Their conclusions were based on a series consisting of 106 cases of established bronchiectasis studied over a period of three to six years. Several most valuable points in prognosis, some rather unexpected, resulted from this investigation. They grouped the patients into three classes: (1) dry cases in which there was no sputum and recurrent haemoptysis was the chief feature; (2) cases with occasional sputum; and (3) fetid cases in which copious foul sputum was the chief symptom. The first group are frequently thought to be relatively benign, but ten of the fourteen cases recorded, which were treated medically, had become infected within six years. Of these patients, three were dead and two totally incapacitated. The second group, cases with occasional sputum, were shown to have as bad a prognosis as those persistently septic (Group 3). Roles and Todd concluded that bronchiectasis in patients who receive medical treatment alone is an extremely fatal disease, for out of forty-nine patients twenty-three were dead and nine totally incapacitated, and of the remainder only four were "dry" five years after a diagnosis was made—a primary mortality of 47 per cent. A further fact brought out by these authors is that, of the nineteen patients with septic bronchiectasis who were relatively well, eighteen had been treated by various surgical procedures.

Such proof as is obtainable, therefore, points to the fact that bronchiectasis is a progressive disease in children and adults which in a large proportion of cases eventually ends fatally.

Medical and Surgical Treatment

The medical care of bronchiectasis until relatively recently consisted of the use of expectorants such as potassium iodide, the administration of creosote by mouth or the induction of cough by the inhalation of creosote vapours, and the treatment of the complications, such as recurrent attacks of pneumonia and haemorrhage, by bed rest and careful nursing. More recently, however, considerable benefit has been derived by the use of gravity to aid evacuation of retained secretions—postural drainage. This treatment is most valuable and effective, and in bronchiectasis, which is very commonly a disease of the lower lobes, consists in inversion of the patient so that the lower chest is placed higher than the head and neck, a position which can be maintained without discomfort for several hours daily if the time is gradually increased. A special postural bed, such as that devised by Nelson, facilitates the procedure. Many patients with widespread bronchiectasis can be kept relatively comfortable, and lose the fetor often associated with the disease, by regular postural drainage for half an hour morning and evening. Furthermore, a course of postural drainage is essential before operations for this disease.

It is my purpose to indicate the gradual evolution of the modern surgical treatment and to attempt to assess the position at the moment and the expectations of the immediate future. Although until relatively recent times bronchiectasis has been considered to be a medical condition, sporadic attempts at a surgical solution have been made since the beginning of this century, if not before. The earlier attempts at extirpation were considerably influenced by fear of the consequences of open pneumothorax and by interference with the respiratory function and the cardiovascular apparatus. The general acceptance of the unsatisfactory results of purely medical treatment, except as palliation, in established bronchiectasis makes excuse for invasion into this field by surgeons unnecessary. Surgeons have, however, also had their rebuffs, and the number and variety of the procedures that have been advocated from time to time provide evidence of the difficulties of the problem from a technical point of view. The tendency has always been towards radical extirpation of the disease, but a high mortality has necessitated a review of the procedure and has from time to time caused a return to measures directed to compression of the bronchial tubes.

Artificial Pneumothorax and Bronchoscopy

The use of artificial pneumothorax is still advocated by some physicians, but if bronchograms are carried out even when the lung is apparently well collapsed the dilatations are still visible and often unaffected in size or shape. Examination of a lung or lobe the seat of established bronchiectasis should quickly convince the sceptic of the impossibility of compressing the rigid sclerotic dilatations. The atrophic type in which the bronchial walls, although considerably dilated, are thin, more rarely give rise to symptoms, as the infective factor is much less in evidence, and unless haemorrhage occurs they are more rarely diagnosed. Todd and Roles record thirteen cases treated by artificial pneumothorax, and found that at the time of their investigation only three of these patients were alive, the remaining ten being dead. Artificial pneumothorax must therefore be considered to be unsatisfactory in established bronchiectasis.

Bronchoscopy is a most important procedure in bronchiectasis, and is especially valuable in ruling out obstructions in the bronchus of the area involved. These may be due to foreign bodies, strictures, or neoplasms, benign or malignant. The effect of bronchoscopic aspiration is generally similar to that of well-controlled postural drainage, but when excessive granulations block a bronchus and lead to acute signs from the absorption of retained secretions, cauterization of the granulations and aspiration through a suction-tube passed beyond the obstruction may tide the patient over a critical phase of the disease.

Phrenicectomy and Thoracoplasty

The object of these two measures is by compression of the lung to keep the cavities empty and prevent retention of secretions. With lessened retention the secretions become thinner and a certain degree of the subacute inflammatory changes in the bronchial walls may thereby resolve and the tubes become compressible after a period of time. The value of paralysis of the diaphragm in bronchiectasis has been widely debated. It is possible that further stagnation and difficulty in expectoration will occur, and a case of death after phrenicectomy, the patient drowning in his bronchial secretions, has been reported. In other cases improvement has resulted, probably from the alteration in the direction of the basal bronchi from a vertical to a more horizontal position by the rise in the diaphragm.

Thoracoplasty entailing removal of large segments of most of the ribs on the affected side has the same object of approximation of the bronchial walls. It has resulted in great improvement in many cases when the disease is unilateral, but if the disease is localized it would appear that the pulmonary collapse produced by the operation often occurs at the expense of the relatively normal tissue. Because of the presence of bronchial mucosa in the dilated tubes adhesion of the walls of the cavities in bronchiectasis, even if they can be approximated by pressure from without, will not therefore take place and lead to their obliteration as do the walls of tuberculous and

pyogenic cavities in the lung tissue which are lined with granulation tissue.

This provides another explanation for the large numbers of failures from all forms of compression treatment, whether medical (pneumothorax or oleothorax) or surgical (compression by firm packing or thoracoplasty). In none of the previous measures can a cure be claimed in the strict sense of the word, as the disease, although maybe improved, is still liable to recrudescence as a result of superimposed infections from the upper air passages; and the occurrence of serious complications such as pneumonia, cerebral abscess, and empyema is always possible. In other words, although perhaps the inflammatory changes are less obvious the diseased tissue is still present. While there have been occasional successes with compression operations, more especially in cases in which there is unilateral rather than unilobar disease, repeated attempts have been made to find a reasonably safe technique for removal of the diseased tissue.

Lobectomy

The first large series was that of Lilienthal (1935), who submitted forty-two patients to lobectomy. Of these twenty-seven died (64 per cent.) as a result of the operation and fifteen recovered, although several were left with bronchial fistulae.

Graham (1925), owing to the dangers of lobectomy, devised the operation which he termed "cautery pneumectomy." In this procedure, after the production of adhesions between the lung and the chest wall, the superficial part of the diseased area of pulmonary tissue was cauterized with a red-hot soldering iron. The slough was allowed to separate, and the process was repeated at intervals of three weeks. The procedure, in my limited experience of it, has been unsatisfactory in the cylindrical and saccular types of bronchiectasis, but in that associated with a large cavity, such as chronic epithelialized pulmonary abscess or the so-called bronchiectatic abscess, it provides adequate drainage and generally leads to improvement, although persistent bronchial fistulae are not uncommon. Graham reported 63 per cent. definitely improved, 11 per cent. operative deaths, and 22 per cent. late deaths in a series of fifty-four cases.

On the Continent a certain number of lobectomies for bronchiectasis were being carried out, chiefly by Sauerbruch and his associates. Their method consisted of a two-stage operation, the first being concerned with the fixation of the lung by removal of segments of the lower ribs, the insertion of a mass of paraffin wax on the parietal pleura, and suture of the wound. The wax was removed several weeks later and the lobe dissected out. Complete obliteration of the pleural space is not produced, especially over the upper lobe and mediastinal surface, and the preliminary procedure would appear to increase the operative difficulties by producing the most extensive adhesions over the portion of lung which it is proposed to remove. In addition the operation leads to considerable deformity, and bronchial fistulae are common, as the chest wall is brought into direct approximation to the divided bronchi.

The modern operation of a single-stage lobectomy was first carried out by Brunn (1929) of San Francisco, who reported six operations, with four cures, one improved, and one death. He demonstrated that it was possible to proceed in a free pleura with relative safety. Shenstone and Janes (1932) of Toronto improved on the method of Brunn by the use of a tourniquet to control the hilum until the affected lobe was removed and the hilar structures were sealed by suture.

The first successful lobectomy for bronchiectasis in this country was carried out by me in April, 1929, by separate ligature of the vessels and the lobar bronchus at the hilum in a boy of 16 years. The patient was later demonstrated at the Medical Society of London by Dr. McDowell (1930). (10 lb. gain in weight, no sputum; vital capacity increased from 2,600 c.cm. to 2,900 c.cm.) An increasing interest in the treatment of bronchiectasis in this country from a surgical aspect followed the publication of a group of ten cases with one early death and one late death by Roberts and Nelson (1933) and another of forty-eight cases with seven deaths by myself and Price Thomas (1934), in the years 1933 and 1934. As it is now nearly ten years since the first operation of one-stage lobectomy was performed in this country I should like to give my impression of the expectations of this form of treatment for bronchiectasis, but would first mention certain factors which have influenced the selection of cases and the technique of the modern operation, largely as a result of past experience.

Value of Bronchography

Our knowledge of the various types and of the distribution of bronchiectasis until the use of radio-opaque oil was only obtained at necropsy—that is, the terminal condition. Since this procedure was devised by Sicard and Forestier (1922) the diagnosis of bronchiectasis has become simple, but in the early days of radical operative treatment only the lower lobes of the lungs were filled, usually both at the same time. As a result of a review of patients after the operation of lobectomy who were not completely rid of their symptoms it was found that in a proportion there was a residual degree of bronchiectasis in the remaining lobe or lobes of the same or the opposite side. The question immediately arose as to whether this finding indicated a fresh spread of the disease or was due to incomplete pre-operative investigation. Reviewing the previous bronchograms, we were convinced that in a majority the original interpretation had been wrong and we had missed evidence of disease in the middle lobe or the lingular process of the upper lobe. The necessity for complete delineation of the whole bronchial tree in both lungs was obviously indicated before an operative decision was made. As this entails a lateral in addition to an antero-posterior bronchogram, in order to prevent overlap of the lateral views, independent filling of the bronchi of each lung at an interval of one to four weeks is required to allow evacuation of the oil from the lung first filled. By this method all bronchi of both lungs can be clearly seen and the extent of the diseased area accurately determined. This method is now invariably followed; the apparently unaffected side being investigated first, as evacuation of the oil is more rapid than from an affected lung. As one would expect, this more rigid standard has demonstrated an increasing number of patients with disease of the right middle lobe and of the lingular process of the left upper lobe, in addition to the respective lower lobes, and has therefore led to the necessity for a wider operation in such patients if a complete cure is to be obtained.

Common Complications

Excepting the risks of the operation itself, all the subsequent complications of lobectomy are the result of sepsis. They include suppurative pericarditis, cerebral abscess, secondary haemorrhage, and suppurative pneumonitis.

Suppurative Pericarditis.—Apart from actual opening of the pericardium at operation—a technical disaster—suppurative pericarditis occurs as a rare but generally fatal complication. The type of case in which it may eventuate is when a rigid infected lobe or portion of lobe—for example, the right middle lobe or the lingular process of the left upper lobe—is densely adherent to a thin pericardium, and in the absence of direct operative opening this complication is probably due to lym-

phatic spread from the infected residual pleural space into a pericardium traumatized but unopened during the dissection.

Cerebral Abscess.—This complication arises in cases of bronchiectasis irrespective of whether operation has been performed or not. It is conceivable, and even probable, that a proportion of patients who succumb to this complication within a short period of operation were suffering from this secondary manifestation of the disease before operation was performed. It is certainly true that metastatic cerebral abscess from pulmonary suppuration can be present without symptoms or can become quiescent after showing symptoms for a few days and later flare into activity, from the effect of anaesthesia combined with a major operation. In other cases the occurrence of infective thrombosis of the pulmonary veins following operation is probably the responsible factor in the causation of metastatic abscesses.

Secondary Haemorrhage.—This complication, likewise the result of septic infection of the divided hilar structures, is fortunately very rare, and has occurred in only two of my patients and is often associated with suppurative pneumonitis.

Suppurative Pneumonitis.—This is the most serious complication of the operation of lobectomy, and has been largely responsible for the post-operative mortality. In my opinion it was the occurrence of this serious complication, although unrecognized, which led to the higher mortality in the earlier series of cases recorded by various observers and necessitated the use of the various two-stage procedures which are such a prominent feature of the literature of lobectomy.

Need for Adhesions

The view held of the advantages of pre-operative upper lobe adhesion can be summed up in the words quoted by Graham *et al.* (1935): "Any procedure which will permit the easy and safe creation of firm adhesions between the unaffected portion of lung and the chest wall will serve greatly to reduce the mortality of the operation, for the double benefit of a minimum of pleural cavity to be infected and a minimal amount of respiratory disturbance during and immediately after the operation will result." Thus it was that after operation fear of extensive pleural infection appeared to be the predominant point and not collapse of the remaining lobe.

Several years ago I pointed out that the serious lesion responsible for collapse was within the lung and not in the pleura—that is, that the chief factor concerned was the inhalation of thick muco-pus into the bronchi of the remaining lobe, which thereby failed to expand and gradually became the site of multiple abscesses, and the accompanying total empyema was a secondary result. With the prevention of this in view, various factors that might have been held partially responsible were considered. A more prolonged pre-operative preparation by postural drainage was undertaken and an autogenous vaccine prepared and given. Again, various methods of anaesthesia with and without suction were tried in conjunction with Dr. Magill, and finally spinal anaesthesia associated with a lateral Trendelenburg position on the operating table was adopted. None of these methods of anaesthesia appeared to have any influence on the occurrence or prevention of the atelectasis, provided there was a free discharge for the secretions and no strong suction was used in the bronchial tree while the chest was open.

In spite of these measures occasional cases of post-operative infective lobar collapse resulted, and further observation disclosed that it often occurred in the most favourable ones—that is, those in which the operation itself had been relatively easy owing to absence of adhesions over the affected area, and those in which the patients were in a very good pre-operative state—whereas other cases which provided considerable operative difficulties owing to adhesions rarely suffered from this complication, and their convalescence was more rapid and uneventful. Further, in reviewing previous cases it was found that only in two patients in whom the remaining lobe was fixed by adhesions had atelectasis occurred.

It appeared, therefore, that even if the lobe was only partially held out by adhesions it would probably retain enough air within the bronchi either to prevent the ingress of pus expressed into the bronchi from the affected lobe during its operative removal or to enable the remaining air to expel any purulent material which had entered the larger lobar bronchi during operation, by the act of coughing after the chest was closed. Any large operative procedure to bring this state of affairs about would undoubtedly add a grave risk to the prognosis. Thus we are brought back to the wisdom of having adhesion of the remaining lobe, for reasons entirely different from those first envisaged.

Methods of Promoting Adhesion

Of the earlier measures to bring about adhesion formation the Sauerbruch method has already been mentioned.

Alexander (1933) originally adopted a two-stage technique, the first stage of which consisted in the removal of three ribs and the intercostal structures, excision of the bare parietal pleura, and separation of the affected lobe, after which the entire visceral and parietal pleura was gently wiped with dry gauze. The superficial wound was then closed without drainage. In the interim before the second stage, usually ten to fourteen days, aspiration of any effusion is undertaken.

Churchill (1937), in carrying out the first part of a two-stage operation, resects a large portion of the eighth rib, divides the adhesions over the affected lobe and completely frees this lobe to the hilum. The parietal pleura over the upper lobe is briskly scrubbed with dry gauze, especially the antero-lateral aspect and the region of the costo-vertebral groove. The chest is then closed. Obviously these preliminary measures, amounting to a major operation, are likely to cause some degree of mortality in patients who are seriously ill; and Churchill records one death following a first-stage procedure and a case in which a patient developed an acute streptococcal empyema but later recovered. He suggests that a mortality of 4 per cent. is to be expected from the first stage, although the final results in his series are exceptionally good.

With the intention of avoiding a major first-stage operation I have attempted in the past three years two relatively simple methods to induce the formation of adhesions over the upper lobe. In both methods artificial pneumothorax was first induced during a period of a week with 1,400 to 1,600 c.cm. of air introduced in three or four sittings.

In the first method a trocar and cannula were introduced into an intercostal space; the trocar was withdrawn and a wire brush passed into the pleural space. An attempt was then made to roughen the parietal pleura over the normal position of the upper lobe by firm brushing. Usually another point in the circumference of the thorax was then chosen, and the process was repeated over another area. The small openings were closed with sutures and all the air withdrawn from the pleural cavity so as to approximate the lung to the roughened parietal pleura. The results were disappointing, as adhesions were poor and scattered.

In the second method a two-inch intercostal incision was made into the pleural cavity posteriorly after pneumothorax had been induced as before. A small retractor was introduced and the parietal pleura was firmly rubbed with gauze on forceps, the process being controlled by the introduction of a flexible light at intervals. The chest was then firmly closed in layers and the air aspirated from the pleural cavity as before. Again the adhesion formation was unsatisfactory in four patients in whom it was tried.

"Pleural Poudrage"

Bethune (1935) published a series of animal experiments for the artificial promotion of pleural adhesions by the introduction of fluids, gases, and powders into the pleural space following induction of pneumothorax. As a result of these experiments he found that the only satisfactory way to obtain adhesions without fluid formation was to blow in *B.P.C.* talc powder (magnesium silicate to which 0.5 per cent. iodine has been added) on to the unaffected lobe of the lung, which is collapsed by a previous artificially induced pneumothorax. The air in the pleura introduced before operation is immediately withdrawn and the cannula removed. The whole procedure is carried out under local anaesthesia and is termed "pleural poudrage." Reasonably firm adhesions are found in three to six weeks, and there is apparently no deleterious effect on the lung itself. Gowar (1939), who recently carried out a further series of experiments with the same object in view, has failed to find any substitute, and confirms Bethune's results.

I have used this method, therefore, in my last eight lobectomies for adults: all have developed adhesions of greater or less degree, but sufficient for the purpose required—that is, to retain the larger part of the residual lobe against the chest wall. In one of these cases, in which the left lower lobe and the lingula of the upper lobe were removed, there was a temporary atelectasis for a week, probably due to swelling around the stump of the lingula partially blocking the main upper-lobe bronchus, otherwise convalescence has been uninterrupted in all. This is a minor operation; it should not result in any serious complication, and there is no apparent effect on the lung from the powder. A previous trial of this method several years ago was unsatisfactory, probably owing to inadequate "poudrage" of the lobe. This form of adhesion production does not completely eliminate the risk of infected collapse, but its incidence is relatively rare.

Indications for Operation

What should be the criteria for operation? The figures of Findlay and Graham for children and of Roles and Todd for adults indicate a serious prognosis for all types of established infected bronchiectasis. As we have no indication at the present moment that any particular types of case are likely to recover by minor measures, it would appear that the factor of infection should be of predominant importance in arriving at a decision. The evidence of infection in children is different from that in adults. In the former, whose power of expectoration is limited without special training, the absence of sputum is no evidence of the absence of infection. Repeated attacks of pneumonia—wrongly termed, because they are not really attacks of pneumonia but of atelectasis with retention—provide positive evidence. If such children are given properly controlled "postural drainage" and taught to expectorate, many of the cases thought to be dry and uninfected will be found to have purulent sputum. In others without sputum bronchoscopic examination will disclose pus coming from the affected area. In adults the presence of purulent sputum, certainly if over an ounce daily under ordinary circumstances, is evidence of definite infection in the dilated tubes. Surely the "dry" variety of bronchiectasis, if haemorrhage is a symptom, must be infected: the blood must arise from granulations or ulceration in the dilated bronchi! Apart from the question of infection in the latter group haemorrhage may in itself be fatal, and it indicates operation. From the observation of Roles and Todd the majority of both groups in adults show evidence of progression of the disease and a large mortality. The foregoing would indicate, therefore, that operation should be seriously considered in all infected cases, and if this is carried out in the relatively early stages the operative results will improve and the number of patients with localized disease will be larger, because they will be cured before "spill-over" infection into other lobes or the opposite lung has occurred.

The second factor that will influence a decision is the extent and distribution of the disease. Complete bronchographic examination, apart from localized unilobar bronchiectasis, may show a series of combinations, the most common being lower-lobe and middle-lobe involvement on the right side, and the lower lobe and lingular process of the upper lobe on the left side. A bilateral lower-lobe or unilateral pulmonary distribution is not infrequently encountered. These types have all been dealt with successfully by resection of the areas involved, but it is too obvious to need emphasis that bilateral disease is certain to have a higher mortality, as there is an increased chance of spread during the immediate post-operative period after the first lobectomy owing to the remaining infected tissue.

The third consideration is the age of the patient. Where sepsis is not so marked a feature—for example, in tumours—the operations of lobectomy and pneumonectomy can be carried out successfully in patients over 60 years of age. There are two reasons why bronchiectasis rarely requires operation after the age of 50 years: the first is that it is a rare disease over this age, probably owing to non-survival; and the second is that, if present, it is generally so extensive in its distribution as to preclude the possibility of operation. As regards the earlier years, I believe the operation of lobectomy has been carried out in patients under 1 year old, but the necessity for this must be very rare. In my own series the youngest was 4 and the oldest, a woman with bilateral basal disease, was 50 years.

Fourthly, there are the obvious considerations applicable to any major operation, such as the absence of other gross disease which in itself constitutes a risk to the patient's life—for instance, uncompensated cardio-vascular disease. Conditions for which the sepsis due to the disease is considered responsible are not contraindications, and these can be improved by pre-operative treatment, postural drainage, etc.; the elimination of infections in the upper air passages, nose, and mouth, in so far as no extensive operation is entailed, is also important. Gross anaemia may necessitate pre-operative blood transfusion followed by the use of large doses of iron. Finally, in view of the fact that certain patients have subsequently developed tuberculosis, it is important, by at least four examinations of the sputum at spaced intervals, to eliminate the possibility of this disease being present.

The indications may be summed up by stating that patients between the ages of 4 and 40 (and, exceptionally, older) with bronchiectasis which is reasonably localized and infected, and in whom there is no serious general contraindication, should be considered as candidates for radical excision of the portion of lung affected.

Early Results of Operation

It is necessary to state that included in the results of operation for bronchiectasis are ten cases of infected unilocular cystic disease of the lung. In their essential operative features they have differed in only one respect

from the cases of saccular and cylindrical bronchiectasis which comprise the majority of the material considered here—that is, in almost all such cases drainage of the infected cyst has been carried out for several weeks as a preliminary to the lobectomy. The total number of individual operations for lobectomy is 166, which in many instances comprises two lobes, or one lobe and a part of another lobe. When two or more lobectomies have been carried out on patients at separate operations they are classed as such. Thus six patients were submitted to total pneumonectomy by two stages—that is, removal of the lower lobe followed by removal of the upper lobe at intervals of four weeks to three years later; they are counted as twelve lobectomies, as their risks are the same. The total number of deaths from all causes (except two from tuberculosis) during their stay in hospital—in one case up to five months—was twenty (12 per cent.). (The causes of death are analysed in Table II.) One of these patients had a spontaneous pneumothorax due to tuberculosis as a terminal factor, but would certainly have died of septicaemia had this not occurred; the death is therefore considered due to operation. Two others had pulmonary tuberculosis as complicating factors, and it is difficult to determine the relative responsibility. It is of some significance that only two deaths have occurred in the last fifty-four cases—a mortality rate of 3.7 per cent.—and both of these patients had advanced and extensive disease. (They died respectively of cerebral abscess in the eleventh week and suppurative pericarditis at the end of the third week.)

Table I shows the distribution of the lobectomies, and the only explanation necessary is that of the figures in brackets opposite the left upper and right upper lobectomies. These refer to patients in whom a previous lower lobectomy had been performed and in whom, therefore, the upper lobectomy has meant the completion of a total pneumonectomy.

TABLE I.—*Distribution of 166 Lobectomies*

Left lower lobe	78	Right lower lobe	42
Left lower lobe and lingula	14	Right middle and lower lobes	15
Left upper lobe	7 (5)	Right upper lobe	4 (1)
Lingular process of left upper lobe	1	Right middle lobe	4
		Right upper and middle lobes	1

Table II gives an analysis of the causes of death, and requires little comment in view of what has been previously stated about the post-operative complications.

TABLE II.—*Causes of Death*

Shock (within 24 hours)	3
Cerebral abscess	4
Suppurative pneumonitis (remaining lobe)	6
Suppurative pneumonitis (opposite lung)	1
Secondary haemorrhage	2
Suppurative pericarditis	2
Septicaemia and pulmonary tuberculosis	1
Reactionary haemorrhage	1
Mortality	20 (12%)

The mortality rate according to age (Table III) shows some very interesting features. It will be observed that in the group aged from 4 to 16, comprising thirty-eight children, there has been no mortality; this strongly reinforces the argument in favour of early operation for established disease. In every case except one the operation has been carried out in a single stage, and I believe that the risk of suppurative pneumonitis in the residual lobe is much lower in children than in adults, although the reason is not obvious. The exception was a child of 15; in this case the adhesions were so dense and the child so ill that the operation was interrupted, being completed ten days later. The other point in this table confirms a view generally held that the older the patient the greater the risk of this operation. Prolonged sepsis will naturally take a toll of the cardiovascular and other physical reserves, and in addition the disease is likely to be more widely spread, and to entail, therefore, more widespread resections of lung tissue.

TABLE III.—*Mortality Rate according to Age*

Age	Number of Patients	Number of Deaths	Mortality Rate
4–16	38	0	0
16–20	21	2	9.5%
20–30	56	8	14%
30–40	33	5	15%
40–50	16	5	31%
50+	2	0	0
Totals	166	20	

Late Results

These are analysed below and in Table IV. We have been able to trace six deaths since discharge from hospital.

TABLE IV.—*Late Results (166 Cases)*

	Cases
Patients symptom-free	78
Patients definitely improved, but with residual symptoms and localized disease	27
Patients who have had lobectomy and are alive, but suffering from active pulmonary tuberculosis	3
Patients worse, having more extensive disease	2
Patients who have had a persistent sinus and bronchial fistula for more than 6 months	4
Two-stage pneumonectomies in 6 patients (12 lobectomies—considered under pneumonectomy)	12
Died before leaving hospital	22
Left the hospital fairly well, but died from various causes during the ensuing years	6
Still in hospital	4
Untraced	8

In two patients, dying three and four years respectively after operation, the cause of death is unknown. Two others died of pulmonary tuberculosis, two years and three and a quarter years after discharge from hospital apparently well. The remaining two died from bronchopneumonia, one being a patient awaiting admission to hospital for removal of the second lower lobe, the first having been satisfactorily removed nine months previously.

The very great majority of those who are symptomless reveal no evidence of residual bronchiectasis, but almost all those "with improvement," however great—and in many cases it has been striking—show bronchographic evidence of residual disease. Of these twenty-seven patients twenty show residual bronchiectasis in the lingular process of the left upper lobe after resection of the left lower lobe, five show bronchiectasis in the opposite lung, and two in the middle lobe after resection of the right lower lobe. Several of these patients await resection of the residual affected tissue.

The importance of the diagnosis of disease in the lingular process of the left upper lobe cannot therefore be overemphasized, as it can so well be removed with the left lower lobe. The diagnosis both from bronchograms and at operation, however, is not always easy, but is improving, and will result in a number of patients passing from the improved to the symptomless group. There is little comment to make upon the three patients who have had lobectomy for bronchiectasis but are now suffering from pulmonary tuberculosis. Before operation they were all carefully examined for tuberculosis, with repeated

sputum examinations. It is certainly incidental in some cases: one of the patients developed the disease five years after discharge from hospital, and has been symptomless until quite recently. Segregation of patients undergoing operation for bronchiectasis from those suffering from open tuberculosis is obviously essential. The cases in which the patients are worse after operation are the results of recovery following suppurative pneumonitis, one of them being a case of bilateral disease. Persistent bronchial fistula is rare, and some of these four cases will probably close in the course of time. The remainder of the end-results do not require explanation.

Total Pneumonectomy

A few observations may here be made about pneumonectomy for bronchiectasis and infected cystic disease. That the patients who recover are able to carry on a normal existence is now proved beyond doubt. Further, that compensation takes place through hypertrophy of the remaining lung is generally accepted, and, as regards function, it can be proved by the steady improvement which results in the vital capacity over the ensuing eighteen months. Necessarily the mortality will be higher than that of a more limited operation, but will almost entirely depend upon the operative difficulties of removal—that is, the density of the adhesions. In this group there were thirty-three cases—thirteen in which the right lung has been removed and twenty in which a left pneumonectomy was performed. Seven patients died in hospital, three cases being left-sided and four right-sided, giving a mortality of 21 per cent. Six cases were done in two stages, the lower lobe being removed first and the upper lobe later for residual disease, the periods between stages varying from three weeks to nine months. In twenty-seven the operation was carried out in one stage. One patient died from miliary tuberculosis some time after discharge from hospital.

The analysis of deaths in this group is instructive. One died from pericarditis and one from bronchopneumonia of low virulence (two months) and do not need comment. Another patient, who was quite reasonably well, was given a blood transfusion on the third day; anuria followed, and death resulted about four days later. Three patients died from the effects of embolism—two from cerebral abscess on the fourth and twelfth day respectively, and one from air embolism on the second day. The other death occurred from a severe gangrenous infection of the pleural cavity. (It is noteworthy that the operation wound remained healed throughout.)

As to late results, nineteen patients are symptomless and working. Four have a bronchial fistula, which will probably heal in due course. Two patients remain in hospital; one who was operated upon several weeks ago is convalescent, the other is recovering well (operation more recent). In all cases of lobectomy and pneumonectomy, unless a thoracoplasty has been previously performed, deformity is negligible.

Conclusion

No one who has seen the satisfactory results which can be obtained by surgical measures could doubt that the operations of lobectomy and pneumonectomy provide the greatest advance in the treatment of bronchiectasis, and I hope I have persuaded you that it is a procedure which is now associated with a mortality that should be negligible if the disease is treated in its early stages, and which has a high proportion of curative results.

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A CASE OF PELLAGRA

THE PATHOLOGICAL CHANGES IN THE SPINAL CORD

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(WITH SPECIAL PLATE)

Pellagra is a rare disease in Great Britain, particularly in children, the published cases up to 1934 being only 131 in number (Stannus and Gibson, 1934). The only cases in children were those described by Box (1914), Hutchison and Paterson (1923), and Parsons (1929). The endemic incidence of pellagra in other countries, especially those where maize is a staple article of diet, has masked the significance of sporadic cases such as the one to be described, and it is possible that many of them pass unrecognized. These sporadic cases are often described as "secondary" pellagra, but there seems to be no reason, on either clinical or pathological grounds, why they should be placed in a separate category from "endemic" pellagra. The changes in medical thought concerning the disease from the time of its description by Gaspar Casal in 1735 have been well reviewed by Flinker (1935), and it would be difficult after reading this review to think of any other condition in which the aetiology has been the subject of so much speculation. The theory that a diet consisting largely of maize was the main factor in the production of pellagra was the predominant one for many years, and no doubt this was responsible for the infrequent recognition of the disease in countries where maize is not a staple food.

Cause of Pellagra

It is now generally recognized that maize plays no specific part in the causation of pellagra. The classical dietetic experiments of Goldberger and his associates (1926) proved that maize only produces pellagra because it is deficient in a substance closely related to vitamin B_2, which they called the "pellagra-preventing factor." Later work has shown that vitamin B_2 is a complex consisting of at least three factors, and that the "pellagra-preventing

factor" is one of these, existing in food as the relatively simple compound nicotinic acid or its amide (Harris, 1937; Spies, Cooper, and Blankenhorn, 1938; Spies, 1938). In a review of the theories of causation of pellagra Stannus (1936) says:

"A study of the disease from a wide angle suggests a new hypothesis—namely, that pellagra is one among a number of conditions which are severally due to a failure in production of 'principles' by the interaction of 'extrinsic factor' in the food with 'intrinsic factor' in the gastric juice. In pellagra one or other or both of these factors may be involved—an extrinsic factor due to deficiencies in the diet, an intrinsic factor due to non-secretion consequent upon gastritis."

Levy Simpson (1935) made a similar suggestion, drawing attention to the similarity between the gastro-intestinal disorders associated with megalocytic hyperchromic anaemias and those associated with "secondary" pellagra. Stannus suggests that gastritis may be a common factor in the production of a megalocytic anaemia, a microcytic anaemia, subacute combined degeneration, and pellagra. He postulates that the gastritis may affect with unequal incidence the secretion of a number of "intrinsic" factors necessary to the normal metabolism of the body, and that the specific disorder present depends upon the intrinsic factor whose secretion is most affected. It is possible on this theory to explain the occasional occurrence of pellagra in cases where intestinal absorption is defective by assuming that the product of interaction of the extrinsic food factor and the intrinsic factor is excreted unabsorbed. A case of this kind was recently seen by one of us (J. MacD. H.) by kind permission of Dr. A. V. Campbell. A farm labourer aged 35 was admitted to hospital for investigation of a chronic diarrhoea of some months' duration. He was found to have a mild pigmented dermatitis of pellagrous appearance on his face, hands, and forearms. His mentality was sluggish, and there was absence of the knee- and ankle-jerks with slight impairment of vibration sense in the legs. There was a histamine-refractory achlorhydria, and bacteriological and serological investigation showed that the diarrhoea was due to infection with *B. dysenteriae* Shiga. After a week's treatment with nicotinic acid the rash was much improved, and it disappeared after a fortnight. The patient left hospital without much improvement in his dysentery having taken place, and he has not been seen since.

Symptoms

The clinical neurological symptoms of pellagra, apart from mental changes, have been described by some writers as being similar to those of subacute combined degeneration, but in a review of 100 cases seen in the Bukowina district Flinker (1934) found that the neurological symptoms and signs were very variable and widely distributed, and that those suggestive of subacute combined degeneration were ill defined and of infrequent occurrence. According to Flinker mental symptoms varying from dullness to severe dementia are common in those cases in which the nervous system is involved. The most frequent affection of the motor system takes the form of a spastic paresis, but it is uncommon for the paresis to be as severe as the reflex changes would suggest. It is usually more marked in the legs than in the arms. Tremors are common, and their character often suggests an involvement of the pallido-striatal system. The involvement of the sensory system is rarely severe, usually consisting of paraesthesiae and numbness. Occasionally there may be signs of peripheral nerve involvement, such as muscular wasting and loss of tendon reflexes. The cranial nerves are usually spared, but sometimes pupillary changes and nystagmus are seen. The signs vary from day to day in a manner suggestive of disseminated sclerosis.

The case to be described showed signs of extensive involvement of the nervous system, including the spinal cord, but neither the clinical features nor the histological findings resembled those in subacute combined degeneration. The only obvious gastro-intestinal disorder was a gastritis associated with a histamine-refractory achlorhydria. There was no abnormality in the diet which could give rise to a vitamin deficiency, and it seems reasonable to suppose that some deficiency in the gastric juice was responsible for the development of the pellagra.

The exact relationship of deficient gastric secretion to the origin of pellagra is not yet known. Petri, Wanscher, and E. and H. P. Stubbe-Teglbjaerg (1937) have reviewed the evidence in the literature in favour of a gastrogenic aetiology of the disease. They quote six cases of their own treated with ventriculin in support of their view that the gastric secretion possesses a specific anti-pellagra function, and conclude that a functional disorder of the digestive tract is the most important aetiological factor in all cases of pellagra. They also suggest that the designations "primary" and "secondary" pellagra should no longer be used. In the light of our present knowledge the following theory seems to be the most acceptable—namely, that pellagra is due to a deficiency of an extrinsic factor in the diet (nicotinic acid) or to a failure of assimilation of this factor, if it be present, owing to gastro-intestinal disease.

Case Report

A boy aged 5 was sent into the Staffordshire General Infirmary by the late Dr. A. E. Hodder on July 4, 1937. He was perfectly healthy until about May, 1936, when he developed a scaly rash and pigmentation of a coppery-red colour on his face, hands, and knees. The rash almost disappeared about September, 1936, nothing being left but a slight reddening of the affected parts. No other symptoms were present at this time, and the child was well until June, 1937, when the rash again appeared on the parts exposed to light. This time the scaly erythema was much more severe, and there was blistering and ulceration of the backs of the hands and the face. Soon after the appearance of the erythema the child's mother noticed a deterioration in his intelligence. He was previously very bright and intelligent, but rapidly became listless and apathetic. He would cry very readily, sometimes for no obvious reason. His speech became very slurred and almost unintelligible, and his mother thinks that he was not aware of what was going on around him or of what was said to him, as he often took no notice, but moaned and cried out for long periods at a time. Up to three days before admission he was very restless and could not sleep, but during the last three days he had been drowsy and the involuntary crying had become less frequent. Soon after the failure of intelligence was noticed the boy began to stumble easily and "rapidly went off his feet." He "would tremble all over" when attempts were made to put him on his feet, and he was by then unable to stand at all.

Personal and Family History.—The boy was born near Stafford and had never been more than a few miles away from home. His parents have lived near Stafford all their lives, but the father was in the Army for two years during the war, part of which time was spent in India. There were five other children in the family—three girls, aged 17, 14, and 7 years, and two other boys, aged 13 and 11. These children were all examined, and they appeared to be perfectly healthy. All the children, including the patient, were fed upon an ordinary mixed diet, which included plenty of fresh vegetables, milk, and butter, with perhaps an excess of the latter, as the parents were farmers. The patient showed no idiosyncrasy to any kind of food.

Previous Illnesses.—These were chicken-pox in September, 1936, and whooping-cough in March, 1937. Soon after the

latter disease a skin lesion, which was thought to be ringworm, appeared on the lower lumbar region, and there was slight ulceration. The scar of this was still to be seen, and there was a small scabbed area.

EXAMINATION

The child lay curled up in bed and did not like to be turned towards the light. He was drowsy and very sluggish in his response to questions. He occasionally attempted to reply, but his speech was unintelligible and frequently punctuated by low cries, rather like a "meningitic cry." He could not stand unless supported, but was able to sit up without assistance.

Skin Lesions.—The skin was excessively dry over the whole body. There was a symmetrically distributed coppery-red erythema on the face, ears, and upper part of the chest and neck (Plate, Fig. 1). The hands, forearms, and knees were also affected, as were the scrotum and perineum to a slight extent. There was oedema and thickening of the skin and extensive desquamation. On the face and the backs of the hands there was blister formation and ulceration. There was some reddening and scarring over the lower lumbar region, in a roughly circular area about the size of a half-crown. Bleeding fissures were present at the angles of the mouth, and the tongue was red, dry, and slightly swollen. The buccal mucosa was also red and dry. The hair was dry and thin, and appeared to have fallen out in places.

No abnormality was found in the chest and heart. The blood pressure was 102/75.

Central Nervous System.—The pupils were widely dilated, but reacted to light and accommodation. The optic fundi and disks appeared normal. Slight ill-sustained nystagmoid jerks were observed on movement of the eyes in all directions. There was definite photophobia, and the child quickly curled up and turned his face away from a bright light.

Motor System.—Both arms were markedly spastic, and movements were accompanied by a coarse tremor which was increased in intensity when definite movements, such as conveying food to the mouth, were attempted. Motor power was extremely weak, and objects were held only with difficulty. Both legs were weak and spastic. The child was unable to stand unless supported. He staggered and fell in all directions when support was withdrawn. Some of this appeared to be due to loss of position sense apart from motor weakness. The same coarse tremor was present in the legs as in the arms.

Reflexes.—The biceps, triceps, supinator, and pronator jerks were all brisk on both sides. The right and left upper abdominal reflexes were present but sluggish; the lower ones were both absent. Both knee- and ankle-jerks were exaggerated, and there were bilateral extensor plantar responses.

The sensory system could not be examined, but there appeared to be some loss of pain sensibility in the hands and feet, as pinprick did not elicit much response unless applied very strongly.

PATHOLOGICAL INVESTIGATIONS

There was a complete achlorhydria, with no response to histamine injection. The blood count showed: red cells, 4,450,000 per c.mm.; haemoglobin, 79 per cent.; colour index, 0.88. The leucocytes numbered 11,000 per c.mm.: polymorphs, 68.75 per cent.; lymphocytes, 24.5 per cent.; monocytes, 4.5 per cent.; eosinophils, 2.0 per cent.; and basophils, 0.25 per cent. The red cells showed slight anisocytosis but no poikilocytosis. The halometer reading was 7.5. Examination of the cerebrospinal fluid revealed a pressure of 120 mm. The fluid was slightly bloodstained, due to the child struggling. Cytology was not possible owing to blood being present. The protein content was 70 mg. per 100 c.cm. The Wassermann reaction was negative in blood and fluid. The blood calcium amounted to 10.3 mg. per 100 c.cm. The urine contained no abnormal constituents. Its specific gravity was 1030, and its chlorides 114 mg. per 100 c.cm.

On admission the stools were loose and semi-formed, and pale yellow in colour. Microscopical examination showed no pus, blood, or mucus, but there was an excess of free fatty acid crystals, and also much undigested foodstuff. Charcot-Leyden crystals were present. There was no excess of soaps, and no protozoa or cysts were seen. On culture, only *B. coli* was recovered. A quantitative estimation of the faecal fat content was done later, but treatment had been continued for a fortnight at this time. The results were as follows: total fat, 20 per cent. by weight of dried faeces; free fatty acid, 9 per cent.; neutral fat, 4 per cent.; combined fatty acids, 7 per cent. These figures are within normal limits.

The blood cholesterol amounted to 189 mg. per 100 c.cm. In a test of glucose tolerance the fasting blood sugar was 0.1 per cent. Half an hour after 25 grammes of glucose were given it was 0.125 per cent.; at one hour, 0.15 per cent.; at one and a half hours, 0.143 per cent.; and at two hours, 0.1 per cent. Radiographs of the long bones and skull showed no rarefaction or other abnormality. A follow-through radiographic examination of the stomach and alimentary tract revealed no abnormality or delay in passage of the barium meal.

TREATMENT AND PROGRESS

On July 5, 1937, a daily dosage of 6 drachms of fresh brewer's yeast was begun, in equal portions of two drachms three times a day, together with acid. hydrochlor. dil. 35 minims. On July 15 and July 22, 4 c.cm. of campolon was given intramuscularly. After about one week's stay in hospital a considerable improvement in the rash was noticed. The ulcers on the hands and face were almost healed, and erythema was much less. The drowsiness had disappeared. The child took notice when he was spoken to and was able to ask for food, but he was still unable to stand without support. At the end of the second week in hospital the coppery-red discoloration of the skin had completely disappeared, the ulceration was entirely healed, and all that could be seen on the affected areas of the skin was a café-au-lait coloration and some dry desquamation. The child could raise himself to his feet and stand without support, but he was unable to walk without assistance because of the spastic condition of his legs. His mental state was much better and his speech more distinct, so that occasionally he could be understood, but he could not co-operate well enough for an examination of his sensory system to be made. There was no improvement in sphincter control.

On July 26 the child developed measles in an epidemic which affected several children in the ward, and he died of bronchopneumonia two days later. The measles rash was very intense on the sites of the previous pellagra rash and only slight elsewhere.

Post-mortem Findings

A post-mortem examination was made twelve hours after death. The respiratory organs showed extensive bilateral bronchopneumonia, with much frothy muco-pus in the air passages. The lungs were otherwise healthy. The heart muscle was rather pale. All the chambers contained agonal clot. The aortic cusp of the mitral valve showed a roughly circular patch of subintimal lipoid deposit on its undersurface, about ¾ cm. in diameter. The oesophagus was normal in appearance. The whole of the gastric mucosa presented a finely nodular appearance—the so-called *état mamelonné* of chronic gastritis. There was no evidence of ulceration. The small intestines appeared to be rather thin-walled, but otherwise there were no naked-eye changes. The large intestine was also rather thin-walled, but otherwise normal. The spleen, suprarenals, pancreas, and urinary bladder were normal. The kidneys showed slight cloudy swelling, and the liver slight toxic changes. The brain and spinal cord were removed intact for histological examination: no naked-eye changes were seen.

Report on the Histological Examination

Sections were stained from various parts of the cortex, brain stem, and spinal cord by the usual stains for nervous tissue (Plate, Figs. 2, 3, and 4). The most striking abnormalities were seen by the Nissl and Marchi methods, the Weigert-Pal and Scharlach R methods showing little abnor-

mality. With the Nissl method chromatolytic changes of varying degrees of intensity were seen in many nerve cells. The anterior horn cells of the spinal cord and the cells of the cranial motor nerves were most affected. Some of them showed the typical appearances of central chromatolysis. In others the eccentric or subcapsular position of the nucleus and the breaking up of the Nissl substance were similar, but the angular outline of the cells was preserved or even exaggerated. Cells of this kind were most abundant in the lumbar enlargement, and they were not seen elsewhere in the spinal cord. The cells of the intermedio-lateral tract appeared normal. In those of Clarke's column the nucleus was often more eccentric than normal, but the appearances were not very unusual. In the nuclei of the cranial nerves and in the motor cortex a large proportion of the nerve cells had undergone chromatolysis. The Betz cells were particularly affected. Fewer chromatolytic cells were seen in the frontal and occipital cortex, and the hippocampal formations were remarkably free from abnormal cells. In the basal ganglia a small proportion of the large nerve cells were similarly affected, whereas the cells of the substantia nigra and nucleus ruber appeared healthy.

In the cerebellar cortex the Purkinje and granule cells had their normal number and appearance. In the dentate nucleus, on the other hand, rather less than half the cells showed a subcapsular position of the nucleus. The cells of the inferior olive looked quite normal. The Gros-Bielschowsky method applied to the cerebellar cortex showed normal baskets round the Purkinje cells and no torpedoes on the axones of the latter.

With the Marchi-Busch method degeneration was very definite in the column of Goll, and was present to a less degree in the direct and indirect spino-cerebellar tracts, and, to a slight degree also, in the pyramidal tracts, both crossed and uncrossed. The entering posterior root fibres were affected at all levels but most severely in the lumbar region, and here also some degeneration of the anterior root fibres was seen. A root from the cauda equina central to the ganglion examined by this method also showed degeneration of a few fibres, but the majority were normal. With Scharlach R the cord at first sight looked normal, but when examined carefully with higher powers a few balls of myelin or early katabolic products of myelin were seen. No red staining indicating further degrees of myelin katabolism was seen. No lipoid was present in the nerve cells of the spinal cord. With the Nissl and haematoxylin-van Gieson methods a few glial stars could be seen in the posterior and lateral columns of the cord. No degenerative or other changes could be observed in the blood vessels of the central nervous system. The mesenteric ganglion examined showed some excess of small cells, but the nerve cells appeared normal.

In the heart the nerves looked healthy. Unfortunately there were no ganglion cells present in the section examined. Of the other organs examined the skin showed an excess of cells in the dermis. These appeared to be chiefly fibroblasts. No lymphocytes or plasma cells could be made out. In the stomach there was evidence of subacute gastritis with much infiltration with small round cells, both diffusely and in more aggregated masses. Among these, eosinophil leucocytes were fairly numerous. There was no apparent loss of oxyntic cells.

Comment

The condition in the nervous system was evidently one of neuronal degeneration in which somatic efferent neurones, both upper and lower, and the neurones which have their cell station in the dorsal root ganglia, were chiefly affected. There was also some degeneration in the spino-cerebellar tracts. The basal ganglia were severely involved, as was also the motor cortex. In other parts of the cortex the condition was less intense, but there were enough chromatolytic nerve cells in them to explain the mental deterioration from which the patient suffered. There was nothing in the spinal cord resembling the changes seen in subacute combined degeneration. The myelin sheaths were not swollen, and no fenestrated areas were seen in the cord similar to those present in the latter disease. Rather the degeneration seen by the Marchi-Busch method indicated degeneration of the nerve fibres as a whole, and, at least so far as the anterior roots were concerned, was associated with severe chromatolytic changes in the cell body. This type of degeneration was, in fact, the only one seen throughout the nervous system.

The degeneration in the motor cortex was of the type which was called by Adolf Meyer "central neuritis" and which has been found by various authors to be the most common change in the cerebral cortex in pellagra (Beyer, 1932; Langworthy, 1931). Pearson (1928) says: "In pellagra every case shows this microscopic picture," and refers to nine cases observed by himself, all showing central neuritis.

There is singularly little evidence to be found in the literature on pellagra as to the character of the spinal lesions, although their general topography is well known. Nageotte and Riche (1907) interpret Tuczek's reports as indicating a lesion of the root fibres after they enter the cord, which, however, differs from that seen in tabes dorsalis in sometimes affecting the fibres most severely near their termination in the nuclei of the dorsal columns. Wilson (1914), Pentschew (1928), and, more recently, Guillain, Bertrand, Mollaret, and Lereboullet (1934) have allied them to the lesions seen in subacute combined degeneration of the cord. The case examined by the latter authors was unusual in that spinal symptoms were severe from the beginning, whereas no dementia was noticed at any time.

In Langworthy's case (1931) the symptoms were, as in the case here reported, of only a few weeks' duration, and the lesions in the spinal cord were recent. They resemble those in our case except that the dorsal columns were reported to be intact, although degenerative changes were seen in the neurones of the posterior root ganglia. The degeneration in the cord was systematized, affecting the pyramidal and spino-cerebellar tracts, and, on the evidence of the photomicrographs, was not of the lacunar type seen in subacute combined degeneration. The case reported by Zimmerman, Cohen, and Gildea (1934) was complicated by alcoholism, but the changes in the nervous system were very similar to those in the present case. They are inclined to agree with Batten, who examined the cord in Sandwith's case, that the degeneration in the dorsal columns is due to lesions of the entering root fibres. In all except one of Pentschew's cases the lesion in the cord consisted of demyelinated scars of irregular and asymmetrical arrangement in the posterior columns and on the margins of the antero-lateral columns. In only one case was there symmetrical and systematized degeneration of the columns of Goll.

From this brief survey of the literature it would appear that the most common lesions in the spinal cord in pellagra consist of symmetrical degeneration of the dorsal columns, especially that of Goll, and the spino-cerebellar and pyramidal tracts. In most cases the afferent tracts are more affected than the efferent, though in occasional cases no lesion of the dorsal columns has been found. Pentschew's cases appear to be unique in the irregularity and focal nature of the spinal lesions.

In most of the reports from which definite evidence can be gleaned, either from the description or from the illustrations, as to the histological details of the lesion, it appears to differ from that of subacute combined degeneration in two respects: it does not present the lacunar appearance due to gross distension of the myelin sheaths which is characteristic of subacute combined degeneration;

nor do the early lesions in the dorsal columns usually affect the central area on each side as they do in the latter disease (Michell Clarke, 1904; Greenfield and O'Flynn, 1933). In the cases reported by Wilson (1914) and White and Hadfield (1927), however, the early lesions were in this area. In the present case the disease is seen in its early stages and appears as a degeneration of the nerve fibre, either as a whole or most intense towards its termination, as suggested by Nageotte and Riche. It was most marked in, although not strictly limited to, the long ascending and descending tracts in the cord.

While the type of disease in this case corresponds to that found in the majority of recorded cases, there appears to be considerable variation in the incidence of the disease on neuronal systems. For example, the posterior columns may be spared and the Purkinje cells of the cerebellar cortex degenerated. Again, in what seems to be a large proportion of all cases of pellagra the spinal cord is unaffected. It would appear that in certain epidemics, or in certain countries, spinal disease is a more common accompaniment of pellagra than in others. If this is so it would suggest that the variations in the incidence of the disease on different parts of the nervous system are due to differences in its causation. This hypothesis is in agreement with the results of animal experiments in vitamin starvation in which minimal differences in diet appear to produce great differences in the degree and incidence of the degeneration in the nervous system.

Summary

The current theories regarding the causation of pellagra are discussed and the literature surveyed.

The clinical neurological symptoms of the condition are described.

A case of pellagra occurring in Great Britain is reported: the pathological changes taking place in the spinal cord are reviewed.

The suggestion is submitted that pellagra may be due to the deficiency of an extrinsic factor in the diet (nicotinic acid) or to a failure to assimilate this factor.

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METASTATIC RENAL INFECTION

BY

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(WITH SPECIAL PLATE)

It is becoming increasingly evident that many minor local infections are often complicated by a transient or even prolonged bacteriaemia. The organisms usually escape the local defences in such small numbers or are of such reduced virulence that the reticulo-endothelial system is able to engulf and destroy them without any metastatic lesions developing. Nevertheless on occasion the invaders are of sterner stuff and cause further inflammatory mischief in other parts of the body. Blood cultures have often been shown to be positive in many local infections, particularly following surgical or accidental trauma. Okell and Elliott (1935) have shown experimentally how slight trauma may drive virulent streptococci from infected tooth sockets into the blood stream. There is no evidence of the bacteriaemia produced by enthusiastic squeezing of a furuncle or following ill-judged incision, but I have no doubt of its occurrence.

The kidney is a common site of these metastatic lesions. The primary focus is usually a boil or carbuncle. In some cases a whitlow, infected abrasion or wound, tonsillitis, nasal and respiratory infections, or even dental sepsis may be the primary cause. The multiple abscesses which may occur in the kidneys in the pyaemia resulting from such conditions as osteomyelitis, septic phlebitis, and ulcerative endocarditis fall, of course, into a separate well-defined group which it is not the purpose of this paper to discuss.

The common organism is the *Staphylococcus aureus* or *albus*, although streptococci and other organisms are occasionally found. It is interesting to speculate why cutaneous infection is often the forerunner of acute osteomyelitis in children and of metastatic renal or perirenal infections in adults. The small capillaries at the growing end of a long bone on slight trauma may give rise to a haematoma, which acts as the nidus for staphylococci circulating in the blood stream. In adults, growth being finished, the metaphyses are not so vulnerable. The kidney is designed as an excretory filter, and might be expected to catch circulating organisms. Trauma may be responsible for localization, as many clinical records of cases of metastatic renal infection following injury and the experimental work of Schnitzler (1913) show. The view that in adults some back pressure on the kidneys from early urethral obstruction, usually of prostatic origin, is a factor in localization would appear to be without foundation. Metastatic renal lesions are commonest in young adults, in whom there is no suggestion of urinary obstruction. Brady (1932) described a case of a carbuncle in a kidney the ureter of which was the seat of a definite stricture. It is curious that staphylococci so commonly lodge in the kidney, and it has been suggested that because they are able to break down urea they find a suitable environment there.

Another interesting feature is the time interval. Quite often the original lesion has been healed for many months before the metastatic lesion appears. Perhaps the clinical healing of an inflammatory disease is no guarantee that all the organisms have been eliminated or destroyed. Many may lie dormant in the tissues for some time, later to become active and spread by the blood stream. The

fact that no local exacerbation precedes the development of the metastatic lesion is against this view. On the other hand, it is possible that very attenuated organisms reach the kidney and, finding such a suitable environment there, are able very slowly to overcome the local resistance and eventually to give rise to a lesion appreciable clinically.

The Renal Lesions

Three lesions can be distinguished. They depend for their origin on the balance between the number and virulence of the organisms arriving in the kidney and the resistance of the patient. Perhaps various mechanical factors also play a part. When a few organisms lodge in a glomerulus a tiny cortical abscess may form. This has usually been regarded as the cause of the so-called primary perinephric abscess. When a greater number of organisms arrive at this site a single large cortical abscess may form.

The most characteristic lesion is the renal carbuncle. This consists of an inflammatory area which usually starts deep in the cortex but may enlarge to involve the superficial cortex and the medulla. It has a fibrous capsule and is made up of numerous suppurating foci separated from one another by septa consisting of inflamed and fibrous renal tissue. It resembles very much the ordinary carbuncle of subcutaneous tissues. The mode of formation of this lesion is a little obscure. Perhaps, as has been suggested, a septic embolus lodges in a fair-sized vessel. Small particles of this break away and are carried into other smaller branches, so that numerous adjacent suppurating foci are produced. There has been much argument among urologists as to what constitutes a carbuncle and what a cortical abscess, the essential feature of the latter being that it is a single suppurating cavity. It is obvious that by the eventual solution of the septa the former may give rise to the latter, and possible that lymphatic spread from the latter may give rise to adjacent suppurative foci so that a carbuncle is formed. The distinction would appear to be of no great importance, but the term " renal carbuncle " is in common use.

The perinephric tissues may be infected secondarily to a carbuncle. In quite a proportion of cases, however, a perinephric abscess appears to be primary—that is, it is not secondary to a well-marked renal infection. The pathological sequence here has usually been regarded as a tiny cortical abscess which has led to secondary infection of the perinephric fat. Many workers, however, have in such cases explored the kidney and found it to be normal, although it is arguable that a tiny abscess could easily be missed, or even may have healed. Again, I know that these abscesses are not all strictly perinephric, but may be paranephric in that they arise outside the fascia of Gerota, as the following case shows.

A young man aged 20 was admitted to hospital on October 6, 1937. For six days he had been feeling cold and shivery and had complained of a vague pain in the right side of the abdomen. There were no urinary symptoms. Six weeks previously he had had a boil on his left arm and one on his neck. On admission the patient was in good general condition. His temperature was 100° F. and pulse 96. There was a scar of a healed furuncle on the right forearm and also one on the back of the neck. In the abdomen was a definite rounded tender mass about the size of a tangerine orange, easily palpable, just above the right spino-umbilical line, which did not move with respiration. On bimanual palpation there seemed to be an indefinite extension of it into the loin. There was a leucocytosis of 20,000 per c.mm.; 80 per cent. of the cells were polymorphonuclear leucocytes. The urine was normal on chemical, microscopical, and cultural examination. The patient was kept under observation for six days, during which his temperature varied between 97° F. and 100° F. It was then decided to explore the right renal area for a perinephric abscess.

Operation was performed on October 11, by oblique lumbar incision, under general anaesthesia. The perirenal fascia was exposed and opened. The kidney was perfectly normal. The mass previously felt was much anterior to the renal region. The wound was closed. An oblique incision was now made in the right iliac fossa over the previously felt swelling. The peritoneal cavity was opened. The appendix was quite normal, but was removed. The mass could then be felt to be lying behind the ascending colon and to be extraperitoneal. The peritoneal cavity was then closed and a finger passed retroperitoneally into the swelling, when thick pus escaped. The posterior wall of the ascending colon from the hepatic flexure to about two inches above the caecum was very much thickened and inflamed. The wound was closed, with drainage. The pus on culture gave a pure growth of *Staph. aureus*. The patient had an uninterrupted convalescence and was discharged to the convalescent home on November 5, 1937.

It is much easier to explain these perirenal metastatic infections as secondary to a small cortical lesion, as there would seem to be no reason why infections should settle primarily in the perinephric tissues, blood-borne infections of other fatty tissues being exceedingly rare. The above case, however, would appear to prove that primary infection of the perirenal and pararenal fat does occur, whatever be the mechanism. It is easy to suggest that lymphatic spread from a small cortical lesion may explain these cases, but surely lymphatic drainage from the kidney occurs to the hilum and then to the para-aortic glands. It must be admitted that primary haematogenous infection of the perinephric tissues is the most likely route.

Symptomatology

The condition may have an acute or insidious onset. In the former the patient complains of great prostration, shivering, and acute pain in the loin, and is extremely ill from the beginning. Usually, however, for several days there is a sense of malaise, and only later a slight aching pain in the side. This may be made worse by deep breathing. When the inflammatory lesion is lying anteriorly pain in the hypochondrium or iliac fossa may occur. Urinary symptoms are conspicuous by their absence.

Clinical Findings.—These are general, local, and urinary. There is the usual evidence of infection as shown by a dry tongue, sweating, rise of temperature, increase of pulse rate, and a leucocytosis. The local signs consist of tenderness in the costo-muscular angle, and if there is marked perirenal involvement a mass may be palpable in the loin. There are no signs elsewhere to account for the rise of temperature and pulse rate.

Urinary Findings.—The urine is usually perfectly normal on chemical and microscopical examination. Occasionally it may contain a trace of albumin and a few pus cells. Cabot (1936) has pointed out that staphylococci can often be demonstrated in a stained smear prepared from the deposit of a well-centrifuged specimen of urine. Cystoscopy, when carried out, reveals normal ureteric orifices, but there may be some diminution in the secretion of phenolsulphonephthalein from the affected side. Plain *x*-ray examination may show some irregularity of the renal outline. If much perinephric infection is present there is often a scoliosis to the affected side and obscuring of the shadow of the psoas margin. In addition, particularly in left-sided cases, diminished

respiratory excursion of the diaphragm on the affected side may be noted. Ascending pyelography has occasionally been done in the past, and may show some deformity of a calix, due to the pressure on it of an abscess; but this examination is not justifiable in very ill patients. Excretion urography, however, provides us with a valuable diagnostic aid, as it can be performed on very ill patients without jeopardizing their chances.

Diagnosis

The disease is difficult to diagnose. In 1936 Graves and Parkins stated that of the forty-two cases in the literature sufficiently fully reported in regard to this point the average delay between the first symptom and diagnosis was sixty-one days. When the local signs are slight the case is often labelled as one of "pyrexia of unknown origin." The importance of a previous history of skin sepsis cannot be overemphasized. Inquiry should be made for it in every case of unexplained pyrexia or doubtful abdomen. Such a history provides the clue to the solution of many clinical enigmas. Common misdiagnoses are influenza, pleurisy, appendicitis, cholecystitis, and even typhoid fever.

Natural Course of the Disease

Unless the condition is recognized and treated surgically death almost always ensues from local extension of the inflammation and the consequent toxaemia. Even pyaemia may arise. It is possible for the abscess to discharge into a renal calix and spontaneous cure occur. The following case is an interesting example.

A youth aged 16 was admitted to hospital on May 2, 1938. He had complained of vague pain over the abdomen for four days, followed by pain in the right iliac fossa for the two days preceding admission. Two months before he had had crops of boils, and in particular a very bad one described as a carbuncle in the left temporal region. He had no urinary symptoms at all. On admission the temperature was 100.4° F. and the pulse 90. His general condition was good. There was some tenderness in the right iliac fossa and in the right costo-muscular angle. The lower pole of the right kidney was just palpable. The urine contained a trace of albumin and a fair number of pus cells, and on culture gave a pure growth of *Staph. aureus*. The blood urea was 30 mg. per 100 c.cm. A blood count showed 21,200 white cells per c.mm., the polymorphs amounting to 88.5 per cent. In a plain radiograph of the urinary tract the renal outlines were a little indefinite, but seemed to be normal. Both psoas outlines were definite. No abnormal opacities were observed in the urinary tract.

An excretion urogram was taken on May 7 (Plate, Fig. 1). A five-minute film showed excellent secretion on both sides. On the left side the calices, pelvis, and ureter were normal; on the right side the upper and lower calices were also normal. Just above the middle of the kidney there was an irregular rounded shadow 2.5 to 3 cm. in diameter, which communicated with the middle calix. The lower abdominal part of the right ureter was markedly dilated. The renal outline over the affected area of the kidney appeared normal, as did both lower ureters. An excretion urogram (Fig. 2) on May 24 showed the cavity previously described to be very much smaller, being less than 1 cm. in its maximum diameter.

Progress.—The patient ran an irregular temperature, varying between 101° F. and 97° F. for about ten days. The temperature then settled and remained normal. He was discharged on May 28. The boy was seen again on August 5 in the urological clinic, when he stated that he was perfectly well, had no symptoms, and was back at full work within a week of leaving hospital. The specimen of urine was clear; it contained no albumin, and no pus cells were discernible under the microscope. On culture it was sterile. An excretion urogram (Fig. 3) showed the right kidney now to be normal.

There would appear to be no doubt from the findings that this patient developed a renal abscess which underwent spontaneous healing following discharge into the middle calix.

Treatment

The above happy termination is unfortunately the exception rather than the rule, so that surgical drainage is required to prevent a fatal issue. In perinephric abscess I believe drainage alone suffices in every case. It is, however, important, if circumstances allow, to explore the kidney and deal with a renal carbuncle should this be present: otherwise efficient drainage would not be obtained. In renal carbuncle I am of the opinion that drainage alone is sufficient in most cases. It is important to break down all the septa in the carbuncle so that adequate drainage is assured. From the very nature of the lesion there is a distinct possibility of bilateral disease—Barney (1931) found bilateral involvement in 12 per cent. of his cases—and this should at least make one think before performing a nephrectomy. At times, however, when the kidney is found riddled with suppurating foci and the patient is in a most precarious condition, provided there is a good functioning kidney on the other side, nephrectomy offers the best chance of cure.

In addition to local treatment general measures are of great importance. Although in the past specific therapy such as staphylococcal antitoxin has been disappointing, it is possible from recent reports of their efficacy in other staphylococcal infections that the recently introduced synthetic compounds may be a valuable addition to our armamentarium in the treatment of such cases.

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STURGE'S DISEASE

BY

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(WITH SPECIAL PLATE)

Rare diseases often acquire a considerable variety of names, and the congenital abnormality about to be described is no exception. It is called "naevoid amentia," Sturge's, Kalischer's, Weber's, Krabbe's, Dimitri's, or Brushfield-Wyatt disease, and not uncommonly it goes under a combination of one or more of the above names.

We agree with Parkes Weber (1936), who, writing under the heading of "Nova et Vetera," modestly disclaims the title to the naming of this condition and suggests that it should be called Sturge's disease. It is true that Schirmer (1860) first noted coexistence of facial naevus with congenital glaucoma, but it was Sturge (1879) who, describing a 6½-year-old girl with an extensive right-sided facial naevus, right-sided buphthalmos, and epileptic fits beginning in the left hand, concluded that the right side of the brain was also involved in the naevoid condition. Sturge maintained his opinion in spite of the adverse criticism of leading contemporary medical men, and the truth of his contention was confirmed by Kalischer (1897), who published the first necropsy findings in a similar case. Subsequently Parkes Weber (1922) showed by means of radiographs that calcification of the brain was present on the same side as the naevus. Full reviews are given by Schiötz (1935), who analysed eighty-nine cases; by Greenwald and Koota (1936), who tabulate eighty-two records; and by Bergstrand, Olivecrona, and Tönnis (1936), who were able to count 108 cases. In many instances confirmation of the brain changes was obtained at necropsy or operation.

Aetiology

Sturge's disease is congenital in origin, and it is permissible to suggest that, by analogy with other comparable disorders, like Recklinghausen's neurofibromatosis, tuberous sclerosis of the brain, or Lindau's disease, it may be hereditary in nature. No definite conclusions can be reached, however, because of lack of relevant records. Only some authors mention that no similar condition was observed in other members of the family; but nowhere is any reference to consanguinity given. There are a few observations nevertheless which bear out the hereditary theory and suggest that a dominant factor may be operative: Oppenheim (1913) found that the mother of a 13-year-old boy with a pial angioma, hemiplegia, and Jacksonian epilepsy herself had a cavernous angioma of the lip; Kufs (1928) gave details of a man of 81 with angiomata of face and brain, and inferred from the previous history of one of the daughters that she had an angioma of the pons; and Geyelin and Penfield (1929) described calcification of brain and epilepsy in a man and his four children.

Sturge's disease has been reported in many parts of the world, but mostly in Europe. The total number of cases we were able to count, including our own case, is 145. With regards to sex there is a slight preponderance of males.

Pathology

The principal features are: (1) A cavernous naevus, the colour of a port-wine stain, in the distribution of one or more branches of the fifth cranial nerve, extending occasionally to areas of skin in other parts of the body and rarely involving the mucous membranes. (2) Vascular changes in the eye on the side of the naevus. (3) Angiomatous changes in vessels of the pia. (4) More or less marked changes in the brain, such as hypoplasia, atrophy, and calcification confined to one side of the cerebrum—the same side as the facial naevus, in cases in which this too is present.

The changes in the pial vessels may vary from a slight telangiectasia to a racemose venous angioma. The calcification, which is actually in the cortex and the subcortical layers, is partly perivascular and partly a deposition of free calcium granules in the brain substance. In the calcified areas the number of nerve cells is greatly reduced and glial tissue relatively increased. These findings suggest that the brain changes are more likely to be part of a local agenesis than a consequence of the superficial naevoid condition.

Clinical Manifestations

The facial and other cutaneous naevi are a prominent sign and are present at birth, but occasionally the naevus may be so inconspicuous as to escape notice. The naevus is usually cavernous and flat, but frequently the skin over it is hypertrophied and raised, or even rough and nodular, partaking in an extreme instance (Greig, 1922) of the character of a sebaceous adenoma. The cerebral symptoms come on usually early in life, often before the end of the first decade. They correspond to the extent and position of the brain changes, and usually consist in either Jacksonian or generalized epileptic seizures, hemiplegia, hemiatrophy, and in a lesser or greater degree of amentia. The Jacksonian fits, hemiplegia, and hemiatrophy are, of course, on the side opposite to that of the facial naevus and cerebral calcification, and the same applies to the hemianaesthesia and homonymous hemianopia which are often observed. Some instances of asymmetry of the skull, tendency to adiposity, and sexual hypoplasia are noted. Glaucoma and exophthalmos on the same side as the facial naevus are quoted in about a third of all records. The glaucoma is thought to be due to venous stasis, and when it is present the fundal veins may show naevoid changes. Dilatation of scleral and conjunctival vessels and heterochromia iridis may also be observed. Even in the absence of glaucoma deep cupping of the optic disk may be seen. Papilloedema practically never occurs in Sturge's disease.

The radiological appearances of the skull are very striking, especially in cases where extensive calcification of the brain has taken place. The calcified areas are confined to the affected half of the cerebrum, which is usually smaller than the sound companion. This may be inferred from a plain radiograph in which the outlines of the diseased half of the cerebrum can often be clearly seen, or confirmed by means of a ventriculogram. The cerebellum is not involved. The shadows thrown by the calcium in the cortex are sinuous, and where the rays strike a sulcus at about a right angle two lines running 1 to 2 mm. apart can be seen. The commonest site of calcification is the occipital cortex. Occasionally, instead of or in addition to the usual surface wavy lines, single or multiple strictly demarcated subcortical shadows may be demonstrated.

Diagnosis and Prognosis

Where we have all or most of the components of the syndrome the diagnosis is easy. Occasionally, however, deviations occur from the classical picture, and an important sign—for example, buphthalmos or even naevus—may be missing altogether, or else the cerebral signs may occur on the same side as the naevus. Other minor variations, such as bilateral involvement of the eyes, are also described. It is important to bear the condition in mind in all cases of idiopathic epilepsy, especially if Jacksonian in type, and even in the absence of facial naevus to take a routine radiograph of the skull. Distinction from the arteriovenous type of naevus is drawn by the absence of vascular bruit.

The immediate outlook for life is good. In milder cases a quite useful existence may be expected, but in the more complete and severe forms mental changes are inevitable and sooner or later lead the affected individual to a mental institution. Survival past early middle age is relatively uncommon.

Treatment

The nature of the condition precludes as a rule anything but palliative measures, and this explains why comparatively few patients had any active treatment. The latter includes attempts at removal of the diseased areas of brain, ligation of the common carotid artery, tying or cauterizing the vessels entering into the formation of the pial naevus, freeing of meningeal adhesions, or simple decompression. Good results have been claimed in a few instances for *x*-ray or radium therapy. Occasionally two or more of the above measures were tried. Failures, including a high mortality rate in the operated cases, appear to be as frequent as successes, and even where amelioration is claimed it may be only temporary. In assessing the value of any treatment it is also important to remember that spontaneous remissions of symptoms are fairly frequent.

Case Record

A man aged 42 was admitted to Erdington House on November 16, 1937, because his brother could no longer afford to look after him. His parents were not related, had both been healthy, and lived till over 80. The patient is fifth in a family of six. One sister died at the age of 30 in a confinement. The rest are healthy. There is no history of naevi or epilepsy in the family.

The naevus on his face was noted at birth, which was normal and at full time. Soon afterwards weakness of the right arm and leg was discovered. He was backward in walking, talking, etc., and was never at school. Since infancy the patient had slight attacks of loss of consciousness. He would go into what appeared like a faint, perhaps slide off his chair, lie without twitching or tremor for a few seconds, and then come round as quickly. Before and during these seizures the facial naevus would become darker. Thundery weather would often be a precipitating factor, and before the "turns" he would usually suffer from left-sided headaches. At first the attacks would occur about once in two to three months; later they became fewer and less pronounced, and now he has been free from them for the last four years. His general health has always been good.

The present mental state of the patient is that of a feeble-minded individual of medium grade. He has full control over his sphincters, is well behaved and co-operative, but incapable of doing any useful work. Physically he is underdeveloped—only 4 ft. 10½ inches tall and weighing 5 st. 10½ lb. The external genitalia appear normal. A bluish-red naevus occupies most of the first and second divisions of the left fifth cranial nerve and extends posteriorly as far as the lambda (Plate, Fig. 4). The skin over the naevus is hypertrophied and roughened and a few sebaceous glands are very prominent. The circumference of the skull is 20 inches, and from ear to ear over the vertex measures 10½ inches. The left side of the skull is smaller than the right. The forehead is shallow and sloping and the teeth prominent. There is a slight degree of scoliosis in the thoracic region, with the convexity to the left. The eyes are not prominent and show no heterochromia or increase in tension. The pupils react well to light and accommodation, the left being slightly oval. The right fundus appears normal, whereas the left optic disk shows an extreme degree of cupping. Neither eye reveals naevoid changes. Right homonymous hemianopia can be demonstrated. The right arm and leg show some atrophy as compared with the left. The posture, diminution of power, increase in tone, and gait are typical of a moderate right-sided hemiplegia. Weakness of the right lower face is only slight and speech is not affected. All deep reflexes on the right side are markedly exaggerated, and patellar and ankle clonus can be elicited on that side. All abdominal reflexes are present equally. The right plantar is extensor, the left flexor. Sensation is difficult to assess accurately on account of dull mentality, but there appears to be some blunting in superficial sensibility in the right side of the body. Deep sensation is not affected. There is no evidence of cerebellar involvement. Examination of the cerebrospinal fluid showed: pressure normal, cells less than 1 lymphocyte per c.mm., Lange 0001121000, protein 30 mg. per 100 c.cm. The Wassermann reaction was negative, and the heart and lungs were normal. The blood pressure was 110/80. Radiographs (Figs. 1, 2, and 3) show calcification of the left cerebral cortex, most marked in the occipital region. It can also be seen that the left cerebral hemisphere is much smaller than the right.

Summary

A description is given of the main features of Sturge's disease, which are: facial and pial naevi, calcification of brain substance, epilepsy, mental retardation, and glaucoma.

A personal case, showing nearly all the classical manifestations of the syndrome, is recorded.

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J. H. Lichtenbelt (*Nederl. Tijdschr. Geneesk.*, 1939, **83**, 1340), who records an illustrative case, states that spontaneous rupture of the stomach is very rare, especially in children, and the prognosis is bad. In only a few cases has recovery taken place after operation. In traumatic rupture the prognosis is better, and recovery has even taken place spontaneously due to the formation of adhesions. The present case was that of a boy, aged 14, who developed rupture of the stomach as the result of fermentation and accumulation of gas in the organ. The abdomen was very much distended, and the blood vessels were compressed, so that there was no circulation in the legs and the boy suffered severe pain. Death took place shortly after admission to hospital, so that no operation could be performed. An hour before death extensive subcutaneous emphysema developed. The condition showed some resemblance to the meteorism which occurs in cattle.

A COMPARATIVE STUDY OF THE TUBERCULIN "PATCH TEST" AND THE INTRACUTANEOUS MANTOUX TEST IN CHILDHOOD

BY

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(WITH SPECIAL PLATE)

The object of this brief communication is to present certain observations on a recent advance in the method of detecting tuberculous infection. From the discovery of tuberculin in 1890 to the present time a growing number of tests have appeared having as their common factor the allergic response of infected individuals to the products of bacillary growth. The more significant of these included the original subcutaneous reaction of Koch, the "Stichreaktion" or "needle-track" reaction of Epstein and Escherich, the cutaneous test of von Pirquet, the conjunctival approach of Calmette, the percutaneous or inunction test of Moro, and finally the intracutaneous test of Mantoux and Moussu. This march of events was naturally towards a greater diagnostic accuracy. From the von Pirquet reaction, with a potential error according to Hamburger of 40 per cent., we reach the present position where, by using the intracutaneous or Mantoux test, the error in negative reactors is but little over 2 per cent. The position is even more emphatically stated by Opie, who claims that the intracutaneous test is the only means by which sensitivity to tuberculin can be measured so accurately that two successive tests can be compared.

The increase in accuracy having been achieved, the next issue was naturally a simplification in technique. The only previous departure from the "inoculation" method, in its several varieties, were the conjunctival approach of Calmette and the inunction test of Moro. In the latter the skin was rubbed with ether to remove fat, and a concentrated old tuberculin was then applied in ointment. This method, though more sensitive than the von Pirquet reaction, still had an error of 15 to 20 per cent. (Lovett). Nevertheless in recent years there has been a return to the percutaneous approach. The modification referred to in this communication is the Vollmer (Lederle) patch test.

Technique of the Vollmer Patch Test

The patch consists essentially of a small strip of adhesive plaster 4 inches by 1 inch, on which are set three squares of filter paper (Plate, Fig. 1). The two outer squares have been saturated with undiluted old tuberculin, the centre with glycerin broth, to act as a control. Two groups of children were investigated in the wards and out-patient department of the Hospital for Sick Children, Great Ormond Street. Two tests were carried out on each child.

1. *The Mantoux Test.*—Into the skin of the right forearm 0.1 c.cm. of 1:1,000 O.T. (old tuberculin) was injected intradermally, and the resulting area of erythema and induration read at the end of forty-eight hours. Unless this area possessed one diameter of 10 mm. or more the test was considered negative.

2. *The Vollmer (Lederle) Patch Test.*—An area of skin over the sternum, or in younger children in the interscapular region, is cleansed with ether or acetone. The chosen site is allowed to dry, and the patch, after removal of the crinoline, is applied, and left in place for forty-eight hours. Washing of the adjacent parts during this period should be avoided. The strip is then removed, and the result read after a further twenty-four hours. The reason for this delay is twofold. First, the reaction is more pronounced at this time, and a result that would appear equivocal on first removing the patch is found to be definitely positive. Secondly, any erythema due to irritation by the plaster itself will have subsided. It may be noted that the latter occurred in only two of the cases tested, and never gave rise to difficulty in interpretation. A positive reaction may appear as a sharply circumscribed, indurated, and reddened square set with small vesicles (Plate, Fig. 2). In other cases only a few discrete pin-head papules were present. Usually both squares reacted, but occasionally only one square did so. The central square remains unchanged. It must be stressed that any reaction, however slight, within the limits of the test squares is significant. The degree of the reaction would appear to vary with the type of skin, and bears no obvious relation to the extent or activity of the tuberculous infection present.

The Present Investigation

Two groups of children were investigated by the intradermal and percutaneous methods, as outlined above. The first were taken in a routine fashion without regard to age, sex, or clinical diagnosis. The ages ranged from 11 months to 12 years. The results (110 cases) were as follows:

Mantoux-positive ..	31—28%	Patch-positive ..	31—28%
Mantoux-negative ..	79—72%	Patch-negative ..	79—72%

In this group, therefore, there was no discrepancy between the two methods. In only one case did the application of a second patch prove positive when the first had given a negative result. "Plaster reactions" occurred in two cases, but gave no difficulty in interpretation.

The second group consisted of 100 children in whom a positive reaction to 1:1,000 O.T. intradermally was established. Comparison with the Vollmer patch test here gave the following results in 100 cases: Mantoux-positive, 100; patch-positive, 98; patch-negative, 2. In this group two children gave a negative response at first, but were positive with a second patch. The reason for this is not clear, but it is assumed that the absorptive power of the skin depends upon its texture and on the efficiency of fat removal during the preliminary cleansing with ether or its equivalent. A defect in the patch is much less likely than the preceding factors, which are obviously capable of some variation in different individuals. In the first child in which discrepancy occurred between the two tests the percutaneous method gave a negative result on three separate occasions. Generalized tuberculosis was present, however, and the Mantoux reaction itself was only weakly positive, indicating the depression of tuberculin sensitivity which is known to occur under such conditions. In the case of the second child no adequate explanation was forthcoming.

These results agree in the main with those from other similar investigations. In Monrad's (1936) series of 1,720 children, 1,362 were Mantoux- and patch-negative, 341 were Mantoux- and patch-positive, and seventeen were Mantoux-positive and patch-negative. There was agreement in 99 per cent. of the whole group, but in only 95 per cent. of the Mantoux-positive series. Wolff and Hurwitz (1937) tested some 936 children under 16. They found that in active cases there was no discrepancy between the two methods, but a difference of 1.8 per cent. in the series as a whole. In a group of 536 cases Dudley Hart (1938) found that 100 were Mantoux-positive and ninety-seven patch-positive.

Vollmer and Goldberger (1937), the pioneers in this work, established the superiority of the patch test over that of von Pirquet. In a recent communication—September, 1938—using a method similar to that described above, their results were as follows: Of 169 children with active tuberculosis only one failed to react positively to the patch, though Mantoux-positive—a discrepancy of less than 1 per cent. In 118 routine cases the Mantoux test with 1:1,000 O.T. did not reveal a single case of infection that was not already discovered by the patch test. These last results compare closely with those obtained above.

Advantages of the Patch Test

1. *Simplicity in Technique.*—It cannot be denied that the Mantoux reaction is reliable only if the injection is a true intradermal one, with exact amounts of material. The patch test, on the other hand, demands a minimum of manipulative skill. This, though obvious, is none the less important in routine work, notably in general practice. At the same time it obviates yet another of the "pricks" to which children are subjected in these days of increasing investigation. There seems to be no tendency on the part of the child to interfere with the patch once it is applied.

2. *Durability of Material.*—For solutions of old tuberculin to be reliable they must be renewed at least every two months. The patch test material, if kept in a cold dry place, will remain reliable for a year.

3. *The Absence of Undesirable Complications.*—General and focal reactions never occur, and necrosing local reactions are unknown.

The Disadvantages

1. The patch test is slightly less reliable than the intracutaneous method. Nevertheless from the present series, and those reviewed in the literature, it is clear that at least 95 per cent., and at most 98 per cent., of cases infected by the tubercle bacillus can be exposed by this method. This leaves 2 to 5 per cent. in which further investigation will be required. In such cases the patch test should be supplemented by the Mantoux, using a 1 in 100 dilution. If the discrepancy still remains, the latter, because of its greater range of sensitivity, should be taken as the reliable indicator.

2. Severe local skin reactions have been reported. I have no personal experience of this whatever. In the main, the patch test would appear to produce a less intense reaction than the corresponding Mantoux. Furthermore, there is little or no associated pruritus, and the erythema fades within two to three weeks at most.

Conclusions

The Vollmer patch test approaches in reliability the intracutaneous method of Mantoux.

In a very high proportion of cases it will reveal the presence of tuberculous infection. For the remaining minority a combination of the patch test and the Mantoux, using stronger concentrations of old tuberculin, or its equivalent, will prove satisfactory.

My thanks are due to Dr. Donald Paterson for his help and permission to use his patients. The "patch tests" were very kindly supplied by Chas. F. Thackray of Leeds.

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THE DIAGNOSTIC VALUE OF THE INTRADERMAL TUBERCULIN TEST IN CHILDREN

BY

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The graded intradermal tuberculin test was introduced by Mantoux in 1910, and has for some years been accepted, at least in this country, as the most reliable tuberculin test. Although the information afforded by the result of the test in any given case is usually clear, it is difficult from the figures available to answer the question of how useful the test is as a general diagnostic measure, and it is to provide this information that the following analysis has been made. The figures heretofore published relate to special groups, such as children from tuberculous homes (Schlesinger and Hart, 1930), the clinically tuberculous (Hart, 1932), the clinically non-tuberculous (Hart, 1932), and children attending a special (chest) hospital (Dow and Lloyd, 1931); nor are figures compiled in other areas or relating to normals directly relevant. The fundamental facts underlying the use of the Mantoux test for diagnostic purposes are:

1. The test is positive in almost 100 per cent. of proved cases of tuberculosis (moribund cases excluded) (Hart, 1932).

2. A positive reaction is proof of past or present tuberculous infection, but it can never be direct evidence that active tuberculosis is present or that any given lesion or symptom is tuberculous in origin.

3. It follows from (1) and (2) that the value of the Mantoux test lies mainly in the exclusion of tuberculous infection which is implied by a negative reaction. Its limit of usefulness is therefore determined by the percentage of positive reactors among the general population. Where this is low, as in infants and young children, the test has found its chief application; where high, as in the adult population, the test can seldom yield useful information.

In its diagnostic application the test is used in patients presenting symptoms or signs that are probably or possibly tuberculous in origin. In the patently tuberculous and non-tuberculous the test is not required for diagnosis. The value of the Mantoux test therefore depends upon the proportion of negative reactors in the group of "probably or possibly tuberculous." This proportion is limited by the factors set forth above, but will vary from one community to another and even within the same community according to age groups, social standing, etc. In addition the increasing use of safe milk, segregation of open cases, and improvement in social conditions should lead to a progressive drop in the number of those who have become tuberculin-sensitive. The test should therefore be more useful with the passage of time. In the light of what has been said there can be no absolute or final assessment of the value of the Mantoux test for diagnosis, and the view is widely held that it is only worth while performing the test in the younger children.

The Present Investigation

At the Hospital for Sick Children the test is extensively employed, and we have for some time had the impression that it is of greater value than is usually accepted. The present analysis has amply borne out that impression. The figures under review relate to Mantoux tests carried out in the out-patient department between 1934 and mid-1938. Except where otherwise stated the tests were done

with 1:1,000 tuberculin. Tuberculin T or P.T. (Burroughs Wellcome) was used indifferently, the dose employed being between 0.1 c.cm. and 0.15 c.cm., injected intradermally. All tests were performed and read either by Dr. A. G. Signy or by me, the technique of testing and the criteria for reading being identical. The tests were usually examined on one occasion only, not earlier than the third or later than the seventh day. An area of erythema 5 mm. in diameter, with or without induration, was the minimum criterion of positivity. Doubtful reactions were very few. Those were retested with 1:100 tuberculin, and are not included in the present figures. Since the patients were in the course of investigation the diagnoses were in most cases provisional. With the exception noted below the whole field of "suspects" was covered (for example, wasting, "contacts," adenitis, arthritis, etc.). It was not felt justifiable to include cases bearing a diagnosis of erythema nodosum, phlyctenular conjunctivitis, or epituberculosis, since these were not primarily tested to 1:1,000 tuberculin because of the danger of severe reactions. The number of cases thus excluded is in any event too small to alter significantly the figures for the series.

The total number of cases in the series is 3,010, of which 748 were positive, giving an over-all percentage of 24.8 positive reactors. The figures for the individual years are shown in Table I. The table suggests that an appreciable fall in the percentage of positive reactions has occurred since 1934. Although a fall is to be expected on *a priori* grounds, it could hardly have been so rapid, and a certain caution is necessary before that conclusion is drawn from the present figures, because the number of tests performed has increased at a more rapid rate than has the number of new out-patient attendances. This may well be the expression of a tendency to test cases in which the diagnosis of tuberculosis is progressively less likely. The percentages for the various years are therefore not strictly comparable. By eliminating from the gross figures 183 cases in which the age was not recorded and arranging the remainder according to age groups Table II is obtained. Consideration of this table shows that the Mantoux test enables a diagnosis of tuberculosis to be excluded in three "suspects" out of four up to the age of 8 years; and even in the age group 10 to 12 years, in which the test is commonly thought to be of little help, it will eliminate just over one-half of the suspects.

TABLE I

Year	Number of Tests	Number of Positives
1934..	370	114
1935..	578	159
1936..	580	140
1937..	870	211
1938 (Half-year)	612	124

TABLE II

Age	Number of Tests	Number Positive	% Positive
0–6/12	19	1	—
6/12–1	30	3	—
1–2	145	24	16.5
2–4	552	93	16.8
4–6	837	171	20.4
6–8	706	187	26.4
8–10	335	131	39.1
10–12	203	96	47.2

Two objections may be raised to the validity of the above figures. (1) Owing to the exigencies of out-patients' conditions many of the tests were read as late as the seventh day, when weak positive reactions might have so faded as to be read as negative. (2) The use of higher concentrations of tuberculin would reveal further positive reactors. With regard to the first point, the stronger grades of positive reaction are easily readable at seven days, and, while it is not possible to correlate intensity of reaction with active tuberculous disease, this is in general associated with well-marked tuberculin sensitivity. Positive reactions missed through late reading are therefore likely to be weak reactions produced by those subclinical infections which lead to tuberculin sensitivity in the healthy population. The following observation lends weight to this assumption: It is the practice at the hospital to re-test to 1:100 tuberculin those negative reactors in whom the diagnosis of tuberculosis is still held to be possible on clinical grounds. During 1937 and the first half of 1938 fifty-one such cases were tested to 1:100 tuberculin, the tests being usually read on the third or fourth day. In no case was a positive reaction recorded. (Hart also finds a difference of only 1 per cent. between the results of 1:1,000 and 1:100 tuberculin tests in clinical tuberculosis.)

It should also be remembered that tests done with concentrated solutions of tuberculin may give rise to non-specific reactions, as has been emphasized by Long and Seibert (1937), working with a chemically pure tuberculin (P.P.D.—purified protein derivative) and a similar product prepared from a non-pathogenic acid-fast organism (timothy-grass bacillus). It is probable, therefore, that the number of true positive reactors missed by relying solely on 1:1,000 tuberculin is very small.

Summary

Three thousand and ten tests to 1:1,000 tuberculin are reported.

An analysis of these tests suggests that the diagnostic value of the test is underrated, especially in older children.

The test enables a diagnosis of tuberculosis to be excluded in three "suspect" cases out of four up to 8 years of age, and in one-half of those aged from 10 to 12 years.

My thanks are due to the members of the honorary staff to whose cases these figures relate; to Dr. Nabarro for much help and encouragement; and to Dr. Signy for the use of records relating to 1934–5. The work has been done under a grant from the Sir Halley Stewart Trust Fund.

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On the occasion of its fifty-second anniversary a special number of *Brazil-Medico* has been issued containing, among others, articles on fixation of the complement in leishmaniasis, Addison's disease of malarial origin, morbid anatomy of typhus, duodenal intubation, seventy cases of Jacobaeus's operation, finger-prints, the normal radiological appearances of the sella turcica, and conservative surgery of calculous cholecystitis.

Clinical Memoranda

Paraldehyde Poisoning treated in a Both Respirator

The Both respirators presented by Lord Nuffield have already been used successfully in the treatment of respiratory failure complicating infantile paralysis. The following case illustrates another group of cases for which these respirators can be used with advantage. It also draws attention to an essential in the treatment of prolonged unconsciousness—the postural drainage of the upper respiratory passages. After stating that the respirator saved the patient's life, the doctor's report continues as follows:

CASE HISTORY

"The patient, a young woman aged 26, weighing 11 stone, had an epileptic fit, which was followed by an attack of acute mania. She was taken to the local hospital, and on March 21, 1939, at 11.30 p.m., and again at 3 a.m. on March 22, 10 c.cm. of evipan was given. On the same day, at 7.30 a.m. and 2 p.m., she received 2 oz. of paraldehyde per rectum. The first dose of paraldehyde was given by the ward sister on a doctor's instructions. She was told to repeat the dose if the patient became obstreperous. This was done after six and a half hours without the doctor seeing the patient again.

"At 5.30 p.m. that day I saw the patient in consultation with the doctor and advised immediate treatment in a mechanical respirator. Unconsciousness was profound; there was a total absence of all reflexes, and intense cyanosis and respiratory difficulty; the tongue was paralysed and blocking air entry. Oxygen was being given into the nares without any improvement in respiration. There was a very strong smell of paraldehyde in the breath. Pulse rate 140—thin and thready. The following shows the progress of the case.

"*6 p.m.*—Admitted to Infectious Diseases Hospital and placed immediately in mechanical respirator. Hewitt's airway introduced and mechanical breathing started. Throat full of mucus, saliva, etc.; respirator tilted to allow drainage of upper respiratory passages.

"*9 p.m.*—Unconsciousness still profound, airway removed; immediate obstruction of air entry by tongue. Throat cleaned out and airway replaced. Pulse: rapid, barely perceptible. Very strong smell of paraldehyde in breath.

"*March 23, 9 a.m.*—Unconsciousness still deep, but some faint movement of legs noticed; no pupillary reaction.

"*11 a.m.*—Airway removed but respirator kept on; unconsciousness still deep; no pupillary reaction, but tongue no longer falling back to obstruct air entry; airway left out. Still very strong smell of paraldehyde in breath.

"*1 p.m.*—Respirator stopped; after half an hour unconsciousness deeper, respiration difficult, increase in cyanosis; no pupillary reaction; respirator started again.

"*6 p.m.*—Deep stupor; some movements of arms and legs; pupils contracting. At this stage she resembled a patient coming out of a deep and prolonged anaesthesia: occasional grunting; one attack of vomiting; strong smell of paraldehyde in vomit. Breath still smelling strongly. The patient was found to breathe better in the respirator, so mechanical breathing was continued. Temperature was 100.2° F.; the pulse 136, stronger.

"*March 24.*—5 a.m.: Consciousness returning; respirator stopped, but patient left in position. 9 a.m.: Patient removed from respirator and put in hospital bed. 12.15 p.m.: Very drowsy, but quite rational; no sign of insanity. Able to take fluids and jelly. Still smell of paraldehyde in breath.

"The patient was of the short thick-necked type, in which a larger size of rubber neck-piece is indicated. The back of the neck was found to have been subjected to friction (redness and some vesication)."

SUMMARY

The above describes a case of paraldehyde poisoning treated in a mechanical respirator (Nuffield Benefaction).

The patient, following an attack of epilepsy, became maniacal. She was treated with evipan, and later received four ounces of paraldehyde per rectum in two doses of two ounces, the interval between being six and a half hours.

The mechanical respirator was used for approximately thirty-six hours, resulting in recovery.

Pembroke College, Oxford. R. R. MACINTOSH, D.M.

Yaws and Syphilis: Genital Chancre in a Boy of 6 Weeks

On the occasion of my last visit to Nigeria, having been reading Professor Blacklock's well-known views on the subject, I had an open mind as to the possible identity of yaws and syphilis. He points out that we do not see secondary syphilis in young children, and that if we did it might, at any rate under tropical conditions, look like yaws. (I write from memory.)

One day I was on a non-medical excursion—getting food for a leper colony—when a baby about 6 weeks old was brought to me for suspected yaws. It had a scabbing eruption, and the scabs were a common size for yaws, about one-quarter to half an inch in diameter. But I was struck by two unusual features: many of the scabs which had fallen off—an uncommon occurrence in yaws, anyway—had left dry depressed beds, reminding me of the rare case of rupia I have seen; and also the scabs were not piled so high as is almost constant in the several thousand cases of yaws I have seen. The mother, however, confirmed my suspicions in an utterly unexpected way. I asked whether the baby was a boy or a girl. The mother, not content with saying "boy," demonstrated the fact by holding the child before me; it was naked, of course. I laughed, and said I took her word for it; but I looked, and there was a genital hard chancre. A hard chancre of the genitalia in a boy of 6 weeks! It had had the customary circumcision by a native "herbalist," and doubtless was infected in the course of it. A hard rolled edge is, so far as I know, unheard of in a primary yaw. The real lesson, however, is that if my almost untrained eye could recognize a rupia in such a child the argument mentioned for identity of yaws and syphilis is greatly weakened.

Another argument relates to the non-discovery of congenital yaws. It is suggested that not every stage of syphilitic infection in the mother produces congenital syphilitic children and that children are rarely born to women with florid yaws. It is true that yaws attacks children under 10 almost exclusively in the districts where hardly anyone escapes it. But I have seen two cases of florid yaws which existed at the time of confinement; the children appeared perfectly healthy. Blood for serum examination was unfortunately refused. These two cases went so far towards replying to the argument quoted that I fear I have not even noted the ages of sucklings of yaws-infected mothers in larger and more hurried clinics since. The rarity of florid yaws in pregnant women may, in fact, be as much a mistake as one I once published myself—namely, the non-discovery of crab yaws and florid yaws together. This was so wrong that in reporting a later series of some 2,000 cases I had to describe fifty-five in which the two conditions occurred together!

K. W. TODD, M.R.C.S., L.R.C.P.,
Acting Medical Officer, Leper Settlement,
Onitsha, Nigeria.

Reviews

PRIMARY CARCINOMA OF THE LUNG

Del Carcinoma Primitivo Broncopulmonar. By Niceto S. Loizaga. (Pp. 219; 20 illustrations. No price given.) Buenos Aires: Libreria "El Ateneo." 1938.

Professor Loizaga's monograph on primary carcinoma of the lungs and bronchi is based on a study of forty-six cases seen at the Francisco Javier Muñiz Hospital, Buenos Aires, during the last ten years. Of these forty-six cases, twenty-eight are summarized and the findings at necropsy are given in twenty-one. Emphasis is laid on the diagnostic value of examination of the sputum for malignant cells, while routine bronchography and bronchoscopy do not seem to be used as often as in this country.

After a historical survey of the subject the author discusses, in a most interesting and valuable chapter, the question of frequency, and notes that in Buenos Aires at the beginning of this century a diagnosis of pulmonary neoplasm was seldom made, whereas now between four and six cases are seen annually at his own hospital alone. This apparent increase might be due to more accurate diagnosis or to a real increase in the frequency of the condition. Another possibility considered is the fact that in Buenos Aires the potential cancer population is to-day considerably larger than it was forty years ago, this being due to immigration of large numbers of adults, and also to a steadily falling general mortality rate associated with a high birth rate. However, after examining statistically his own and other authors' figures, Professor Loizaga concludes that there has been a genuine increase in the frequency of broncho-pulmonary carcinoma during the last two decades. The disease is most common between the ages of 41 and 50, occurs much more frequently in men than in women, and affects the right lung more often than the left. Apart from these factors and the well-known one of chronic irritation, the aetiology remains obscure.

The anatomical classification used is the generally accepted one—namely, endobronchial (polypoid, ulcerating, annular), diffuse, hilar, mediastinal, pleural, circumscribed nodular, multinodular, lobar, massive, cavitating, and granular or miliary. These various types are clearly illustrated by diagrams and by excellent photographs of pathological specimens. The *x*-ray reproductions are disappointing, except for No. 17, showing involvement of the middle lobe. The photomicrographs showing histological detail are admirable, but few would agree with the unusually complicated histological classification. The modes of spread are discussed in full and illustrated by reproductions of Rouvière's well-known diagrams of the lymphatic drainage of the lungs. A full bibliography is given; unfortunately, however, no dates are given against some of the references, and others are misspelt. The production is excellent.

SPINAL ANAESTHESIA

Spinal Anesthesia. By Louis H. Maxson, A.B., M.D. Foreword by W. Wayne Babcock, M.D., LL.D., F.A.C.S. (Pp. 409; 69 figures. Frontispiece. 30s. net.) London: J. B. Lippincott. 1939.

In 1885 Corning of New York accidentally produced spinal anaesthesia in a dog by means of cocaine. The story of spinal anaesthesia since that time has been one of varying fortunes. The enthusiasm of early workers led them to use it for unsuitable cases, and their lack of knowledge regarding the correct technique often produced undesirable results. The past ten years, however, have seen spinal anaesthesia firmly established in the surgical world, and it is therefore an opportune moment for the appearance of a sound and up-to-date textbook on the subject. Dr. Maxson has produced such a volume. The whole field of spinal anaesthesia from its early history to its use as a therapeutic agent has been covered in a workmanlike manner. The chapter on technique may be mentioned as an example of the author's thoroughness. Here are described in detail the techniques devised by more than twenty different anaesthetists who have added their experience to our knowledge of the subject.

Although he has had considerable experience of spinal anaesthesia, Dr. Maxson has kept his sense of proportion, and does not hesitate to expose the limitations of this method. Throughout the book he has placed illustrative quotations from other enthusiasts in the art, and if their views are at variance with his own he gives the reason for this difference of opinion. Only a few points call for criticism, and they are comparatively minor ones. No mention is made of the heavy percaine solution (percaine 1:200, glucose 6 per cent.), but perhaps this has not been on the market long enough to have had extensive trial in America. Nor is there mention of the use of ephedrine when given intravenously to combat the fall in blood pressure. The distinction between the lowered blood pressure in spinal anaesthesia and that which occurs in shock is not emphasized as much as it might have been, and, when discussing the headache which sometimes follows, the author omits to mention that it may also follow lumbar puncture for diagnostic purposes. Percaine is described as a rather slow-acting anaesthetic. It is true that it is slower in action than the cocaine group of drugs, but it has not been the general experience of anaesthetists in this country that one may have to wait fifteen to thirty minutes before anaesthesia is established. It is interesting to note that the author is a warm advocate of mouth-to-mouth breathing as a form of artificial respiration. The foregoing criticisms in no way detract from the value of the book, which should be of real use as a textbook to the novice and as a work of reference to the expert.

SOCIAL ASPECTS OF TUBERCULOSIS

Tuberculose et Médecine Sociale. By Étienne Bernard. Preface by Professor F. Bezançon. (Pp. 160; 4 figures. 36 fr.) Paris: Masson et Cie. 1938.

So much of what is written on social aspects of tuberculosis tends to mere repetition of what has been said many times before that a reviewer is apt to pick up a new book on the subject with a resigned sigh. The monograph by Dr. Bernard, however, proved first a pleasant surprise and then quite engrossing, not so much because he has anything startlingly new to bring forward, but because he makes out his case with such vigour and conviction and such graphic histories of patients that the whole subject assumes new interest and importance. Although Dr. Bernard is concerned chiefly with conditions in France, a country with a tuberculosis mortality much higher and public health administration less developed than England, many of his conclusions hold good for this country.

Dr. Bernard discusses the tuberculosis mortality in France, and compares it with that in other countries. He stresses the importance of ignorance, lack of general hygiene (particularly in rural districts), slums, and undernutrition. He devotes a chapter to dangers run in schools and institutions that care for children as the result of

undetected phthisis in adults associated with them. A chapter follows on "convalescence of the primary tuberculous infection"; he urges a period of rest for everyone, child or adolescent, in whom such an infection is detected, even if the only symptom and sign of this is a recent change from negative to positive tuberculin test. And Dr. Bernard is at pains to show that his policy would not unduly interfere either with the education or career of children and adolescents or with the maintenance of the institutions to which they belong, but would, he believes, be an important factor in the prevention of phthisis later. The prevention of tuberculosis in students—a subject now exciting general interest—is discussed in a separate section, and the relative factors in the student's mode of life are analysed; the special provision made in France for students suffering from tuberculosis is described. Dr. Bernard then discusses the long delays that occur in "placing" all types of cases in sanatoria, owing to the complicated arrangement by which payment is obtained for the cost of maintenance of needy patients. The delays in this country appear trivial by comparison! Chapters follow on the morale of tuberculous patients, rehabilitation and after-care, and the medico-social aspects of uninterruptedly advancing forms of phthisis. In a section of topical interest Dr. Bernard discusses the importance of tuberculosis to the Army and the clinical and medico-social aspects of "coughers" (tousseurs) in time of war. It becomes obvious that in the event of war army recruitment and pensioning will need to be based on criteria very different from those adopted during the last war. Dr. Bernard concludes with a philosophical yet practical discussion on the "destiny" of tuberculosis. He draws attention to figures that should give food for thought here: the tuberculosis mortality per 100,000 population in 1906 in France, Italy, Germany, the United States, Holland, Denmark, and England was 222, 166, 187, 180, 178, 164, and 165 respectively. In 1934 the figures were 128, 92, 72, 56, 54, 58, and 76.

This is an excellent little book which should be read by everyone engaged in tuberculosis work.

ENCYCLOPAEDIA OF HAEMATOLOGY

Handbook of Hematology. Edited by Hal Downey. Four volumes. (Pp. 698, 886, 774, and 778; 1,448 figures, including 50 coloured plates. £16 16s. for four volumes.) London: Hamish Hamilton. 1938.

This handbook of haematology in four volumes is a long-expected and much-needed encyclopaedia of knowledge to date of all that appertains to the blood in man and in animals. It is a stupendous work, the combined efforts of many specialists collected and appraised under the able editorship of Hal Downey, professor of anatomy, University of Minnesota Medical School, Minneapolis, who has allowed his expert contributors a useful freedom for their individual opinions in their respective subjects, many of which are of a highly controversial nature; thereby the general reviewer welcomes the limitations of his province and can feel that the specialist is the best reviewer of the section he contributes. Indeed no *one* reviewer is qualified to pass judgment on all the articles of an encyclopaedia.

The first noticeable feature of the work is the absence of the constantly repeated detailed accounts of methods with old worn plates and diagrams more properly belonging to the smaller primers on haematology and haematological technique. In the chapter on vital staining the technique has been over-condensed, and more detail would be appreciated. Especially valuable and interesting are the sections on the phylogenesis of the blood cells and their relation to each other, and to the corresponding cells found in the blood of lower vertebrates. The sections on mast cells and blood plates are especially instructive. Among blood diseases pernicious anaemia is an excellent chapter; so also are those dealing with histology of bone marrow and spleen.

The editor deserves much praise for his care in selection and for the bibliography, which can pass a searching test. The illustrations are extremely good, especially the coloured ones. The pity is the unavoidable use of surface paper, so that the weight of the volumes is not favourable to easy reading.

ANOPHELINES OF ETHIOPIA

Mosquitoes of the Ethiopian Region. II—Anophelini: Adults and Early Stages. By the late Alwen M. Evans, D.Sc. (Pp. 404; 174 figures. £1.) London: British Museum. 1938.

It is sad to think that Dr. Evans did not live long enough to see the publication of her monograph on the Ethiopian anopheline mosquitos on which she had worked so intensively for so many years. Fortunately for science her work was so nearly complete that Dr. Edwards of the British Museum was able to fill in the few gaps left by the author and to include descriptions of new species discovered shortly before publication. The book is therefore up to date, and will undoubtedly remain for some years the standard reference work on these mosquitos.

There are three sections: the first, dealing with bionomics, structure, technique, and classification, forms a useful introduction to the others; the second consists of keys for determining species of adults and of larvae. The abbreviated key to domestic species only will be appreciated by medical officers with some knowledge of mosquito morphology. It is necessary to point out here a serious misprint on page 46; in the right-hand column the figures 5 and 8 should be transposed; as they stand, these figures render a great part of the key to the adults invalid. The third and main section of the work comprises detailed descriptions of all stages of every known species of Ethiopian anopheles, in all some sixty species and twenty varieties. The chief morphological characters are clearly illustrated, mainly by the author. About 140 references and an index to all scientific names complete a worthy memorial to a great worker.

The book is intended for entomologists; in fact, the medical entomologists of Africa have awaited the publication of this work with some eagerness if not impatience. The general practitioner or Government medical officer will hardly use it except in so far as his interest in the bionomics of the African malaria vectors is aroused; on these matters he will find admirable summaries on the most recent thought and discoveries, especially regarding the two important species—*A. gambiae* and *A. funestus*.

ORTHOPAEDIC NURSING

A Textbook of Orthopaedic Nursing. By Evelyn C. Pearce. With a foreword by the late Sir Robert Jones, Bt., K.C.B., C.B.E., F.R.C.S., and an introductory chapter by Dame Agnes Hunt, D.B.E., R.R.C. Second edition. (Pp. 230; 101 figures. 7s. 6d. net.) London: Faber and Faber. 1939.

There is no doubt that orthopaedic nursing has come to stay. A special knowledge of this branch of work is required not only in orthopaedic hospitals but in orthopaedic departments at general hospitals and in the clinics that are springing up all over the country. When one attempts to define the scope of orthopaedic nursing difficulties immediately arise, for those most interested in this work are not yet agreed among themselves. A certificate

(not recognized by the General Nursing Council) in orthopaedic nursing is now obtainable, but it is the subject of considerable criticism, since it may tempt a girl to be content with something short of a recognized diploma, and perhaps to think that the orthopaedic nurse or after-care sister can attain to a position of authority without becoming either a qualified nurse or masseuse.

The would-be author of a book on orthopaedic nursing is therefore faced with a difficult task. There is no doubt that textbooks are badly needed, but it is not so easy to say what they should contain. Miss Evelyn Pearce, one of the most successful teachers in the nursing profession, has written a second edition of her *Textbook of Orthopaedic Nursing*, and one hoped that it would be of the same high order as her other publications. Unfortunately this is hardly the case; it lacks balance. Clearly Miss Pearce cannot please everybody, but she could set a course and stick to it, and she would be safe in confining her attention to such things as are beyond doubt the work of the orthopaedic nurse. But her student is a clinician on pages 156 to 160, where she receives the most minute instruction (final Fellowship standard) in the examination of a patient thought to have a scoliosis; a masseuse throughout most of the chapter on poliomyelitis; and a moderately experienced surgeon when it comes to providing the patient with an instrument. On the other hand, she need not bother her head about *exactly* what to give children to prevent rickets (p. 93), and the special surgical instruments used during orthopaedic operations are not worth mentioning. Illustrations are an important part of any textbook; but they cost a lot of money and have to be chosen with care. Why give the nurse beautiful radiographs of arthritis (one upside down —Fig. 48B) and fractures, but few pictures dealing with plaster work, and hardly any of the apparatus used at hospitals that have the hardihood not to follow Oswestry in every detail?

The information given is accurate and up-to-date, and could well be described as "Elementary Orthopaedics for Nurses"; under this title the book could be recommended without reserve.

Notes on Books

A Journey Round My Skull (Faber and Faber, 8s. 6d.) is a truly remarkable book. FRIGYES KARINTHY is a noted Hungarian dramatist and novelist who uses all his literary skill and power of dramatic narrative to express his subjective experiences from the first symptoms of the development of a cerebellar cyst until he finally recovers after a successful operation for its removal by Professor Olivecrona of Stockholm. Those who were privileged to hear Olivecrona's papers at the Plymouth Meeting of the British Medical Association must be interested in the sympathetic study of the great surgeon. Apart from this, however, all doctors, and especially all neurologists, cannot fail to be impressed by this description of subjective symptoms and impressions, free as it is from sentimentality and either self-pity or self-praise. To some the description of the actual operation under local anaesthetic may seem the most vivid and exciting part of the narrative; but to the reviewer the steady piling up of the classic progress of headache, vomiting, giddiness, and loss of vision, which is so graphically described, is a masterpiece of writing. Here is a book which is at once a literary treat and a medical document of the highest value; it is to be commended to all who claim to be interested in medicine, whether from the scientific or the humanitarian standpoint.

The *Student's Handbook of Surgical Operations*, by Sir FREDERICK TREVES, was first published in 1892, and reprints or new editions appeared every few years until September, 1930, when the fifth edition was produced. In the period of over eight years since then alterations in surgical technique have amply justified a new edition, and Mr. CECIL WAKELEY and those who have assisted him in producing the sixth edition are to be congratulated on covering a wide field in a precise manner. With its companion work on surgical anatomy by Treves this book has long been popular, and may appropriately be described as a standard textbook for the senior student. The present edition of the operative surgery brings the work well up to date, and at the same time, by retaining certain references to historical procedures which are apt to puzzle the student, such as Wheelhouse's urethrotomy, performs a service for both the student and his teacher. It is published by Cassell and Co. at 12s.

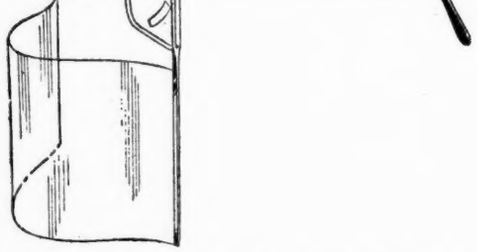
American editions of Volumes I and II of *Treatment in General Practice: the Management of Some Major Medical Disorders*, which first appeared in serial form in the *British Medical Journal*, have just been published in Boston by Little, Brown and Co. These are reprints of the second English editions published last summer by H. K. Lewis and Co. at the price of 8s. 6d. and 10s. 6d. respectively.

Preparations and Appliances

FACE MASK AND SPECTACLE FRAME

Mr. M. D. SHEPPARD, F.R.C.S., honorary surgeon, Chelmsford Hospital, writes:

Mr. Denis Keen of Chelmsford has been kind enough to elaborate and construct for me an adequate face mask and combined spectacle frame. The mask is made of a broad piece of transparent cellulose adequately covering face and nose, and so constructed that no misting of the eyeglasses



occurs. The whole frame is light and conveniently slipped on and off, resting comfortably on the bridge of the nose. Plano lenses or the wearer's own corrected lenses can be worn. This mask therefore affords protection to the wearer as well as the patient.

It has been proved that droplet infection is picked up and conveyed by the conjunctiva as well as the mouth and throat. This mask, therefore, has been specially designed for those who are obliged to use one for prolonged periods, and, as it is not particularly noticeable, it can be strongly recommended for nurses in surgical wards, midwives, and general practitioners. It is to be hoped that if such masks are provided for nurses and sisters engaged in ward and out-patient work, the ease with which they may be slipped on would encourage their constant use. They are manufactured at a very reasonable cost, and their routine use in hospital should protect both nursing staff and patients from frequent cross-infections.

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY APRIL 22 1939

A BRISTOL SURVEY

It is almost certainly true to say that a majority of the professional or upper middle class do not realize how large a proportion of the population has to live within incomes of very narrow limits. A little reflection by the clergy and by general medical practitioners cannot fail to bring home to them the statistical fact; but even then an imagination more vivid than usual is needed for a real appreciation of what this means. A number of general surveys of the standard of living in this country have familiarized students of social science with the situation, but it may well be that the shorter, more restricted and concentrated report on the conditions within a single community, such as that recently issued with regard to Bristol, will enable the average man and woman to envisage the position and its needs more clearly. If this comes with something of a shock so much the better, for amelioration is possible and the need for it urgent. A comprehensive social survey of Bristol, undertaken by the University of that city with the help of the Colston Research Society, is nearing completion. A preliminary report upon certain aspects of this work relating to the standard of living has been made by Mr. Herbert Tout, the Director of the Survey.[1] Its cost is only one shilling, and it contains material and sets forth results with which it is almost imperative that all who are concerned in their work or in their leisure with social questions should make themselves familiar. The report is so compact and so full of information most ably presented that any further attempt at summarization is impossible. Each section should be carefully read and thought over.

Bristol is a relatively prosperous town. The survey was made at a time of general prosperity, and during a summer when unemployment was at a minimum. The investigation was made by personal visitation, and no fewer than 4,491 families supplied information enabling their standard of living to be properly assessed. These families were chosen at random, and it was their family income and their family needs which were the subjects of ascertainment. The survey was confined to families with an income of less than five pounds a week—that is, to families representing about four-fifths of the total population of the city; and the percentages given relate to this four-fifths and not to the whole population. Vagrants and the occupants of lodging-houses, almshouses, and institutions were omitted. From the gross income were deducted the amount of rent, the necessary expense of travelling to work, and the compulsory insurance contributions. The net income available for needs was thus ascertained. The datum line or standard of minimum needs for the family was carefully calculated on the basis of a low allowance per individual for food and clothes and per family for fuel, lighting, and cleaning. The allowance for food is that of the British Medical Association's report. No allowance whatever is made for sickness, savings, old age or burial expenses, holidays and recreation, furniture, tobacco, drink, newspapers, or postage; but in the income are included pensions, public assistance allowances, and the value of meals at school. It is assumed that income is expended with reasonable care, and that the family income is pooled. It is known that this latter assumption is not correct, but it is comforting to read that, as to the former, it is "probably a good deal more accurate than is commonly supposed."

Under these conditions of locality, time, and method a standard is taken which is probably rather high on the side of income and almost certainly low on the side of need. The relation of income to need enables the families to be classified under the heads of poverty, insufficiency, sufficiency, comfort. Even so, sufficiency means only absence of hardship. If an average be taken it is true, on this basis, that the "Bristol working-class family enjoys a standard of living that is more than 100 per cent. above its minimum needs"; but such a statement merely obscures the situation. Taking the above-named groups there are "about 12 per cent. in the comfortable group, 56 per cent. with sufficient income for ordinary living, 21 per cent. who are hard put to it to make a decent home, and 11 per cent. who are in poverty. If the last group is subdivided, about 4 per cent. of all families live on the border line of utter destitution." The position of the upper 68 per cent. is noteworthy and a matter for satisfaction; but surely the position of the other 32 per cent. ought to be communally intolerable. The 11 per cent. alone means that even in Bristol there are 40,000 people living in actual poverty.

One of the great evils of this poverty is its effect upon the rising generation. A typical Bristol family is said to consist of two or three persons: "Both sizes are equally common and they represent just over half the families." The size of the poorest

[1] *The Standard of Living in Bristol. A Preliminary Report of the Work of the University of Bristol Social Survey.* By Herbert Tout, M.A. Bristol: J. W. Arrowsmith. 1939. (1s.)

families is very little above the average of the comfortable group, but these poor families contain a larger number of children under 14 years of age. The proportion of families with three or more children is only 9 per cent., and the striking fact emerges that " if something can be done for families with three or more children 76 per cent. of child poverty will be abolished." At present wages do not bear any relation to needs. There is clear proof that a well-designed family allowance scheme, whatever be the difficulties of formulating one, would greatly reduce child poverty, and there is *prima facie* evidence that its cost would be surprisingly small. Yet, as the report points out, this would be palliative only and would not constitute a frontal attack on the causes of poverty. The report concludes with a brief but illuminating and suggestive consideration of these causes and of other influences on the standards of living. In this discussion the relationship between wages, size of family, and poverty is well stated, and that between standard of living and income derived from the social services is noted. It is perhaps surprising and is certainly not generally realized that a third of working-class families (and a quarter of even the most comfortably placed) are drawing some income from these services ; that at all levels there are some who never receive any help from them ; and that a third of even the families whose incomes are below the standard of minimum needs do not draw upon them.

OBSTETRIC ANALGESIA

Analgesia in labour continues to be a subject of keen interest, and more and more papers appear in which methods and modifications of methods are enthusiastically described. To secure a painless labour is easy. At least half a dozen lines of treatment are at the disposal of every obstetrician. But to secure a painless labour with certainty, and with complete safety to mother and child, is a problem still far from solution. Intermittent chloroform inhalations, intermittent ether inhalations, rectal injection of ether and of paraldehyde mixtures, barbiturate medication, all have their uses, but also, unfortunately, their disadvantages. During recent years much attention has been given to nitrous oxide gas as an analgesic agent, and considerable success has followed the use of automatic machines which enable the patient to " help herself " when relief is most needed. Minnitt's apparatus and Rivett's modification, the " Queen Charlotte's Hospital pattern," are now widely used. These machines depend for their safety upon automatic dilution of gas with an appropriate amount of air. This very dilution, however, limits the efficiency of the machines, and as an alternative arrangement Chassar Moir has produced an apparatus which delivers pure nitrous oxide but is so designed that the patient can get only two breaths of such gas at a time. This machine is more effective in giving a quick start to the analgesia, and it appears to be equally safe in practice. Recently Dr. Elam[1] has combined the virtues of the Minnitt and Moir types of machine by devising an apparatus which enables the patient to receive a small amount of pure gas which is at once followed by a gas–air mixture. There is no doubt that gas analgesia has come to stay, and it is interesting to note that the Central Midwives Board has now sanctioned the use of certain approved machines. Unfortunately the advantages which might be supposed to result from this sanction are at present almost nullified by the extremely strict conditions imposed, which have the effect of making it almost impossible for a midwife to use the method in her own practice. It is to be hoped that this matter will soon receive further consideration.

The history of anaesthesia was the subject of a paper read by Professor A. J. Clark at the Plymouth Meeting of the British Medical Association,[2] and it included many interesting and little-known facts concerning the work of Sir J. Y. Simpson and his associates. Dr. Claye of Leeds[3] has now produced a booklet which describes the evolution of analgesia from Simpson's time to our own. Here again the story of the introduction of ether into obstetric practice, and later of chloroform, is presented in a manner both interesting and instructive to present-day users of the method " à la reine." Dr. Claye has made a special study of the history of " twilight sleep," and a large section of his book is devoted to this subject. The popularity of the morphine–scopolamine treatment of von Steinbüchel and Gauss has had remarkable ups and downs since its introduction some thirty-seven years ago. At the present time the method seems to be ignored by many obstetricians, although there is no doubt that gratifying results can be obtained by its use. Here, more perhaps than in any other branch of medicine, the safety and success of the drugs depend upon the skill and experience of the person who uses them. It is essential that the patient should be in quiet surroundings and kept under constant supervision by an experienced nurse ; any attempt to administer the drugs in a busy hospital by a rule-of-thumb method is certain to be followed by distressing occurrences. The failure to realize the

[1] *J. Obstet. Gynaec. Brit. Emp.*, 46, No. 1, 61.
[2] *British Medical Journal*, November 19, 1938.
[3] *The Evolution of Obstetric Analgesia.* By Andrew M. Claye, M.D., F.R.C.S. Oxford Medical Publications. (6s.)

necessity for studying each individual patient has on occasions given twilight sleep methods a bad name. Dr. Claye gives a full account of the advantages and dangers of the method. In recent years it has been his practice to omit the preliminary morphine injection and to start with a minimum dose of pernocton administered intravenously; a quick amnesia is thus secured, and this state can then be prolonged for many hours by judicious scopolamine medication. The results are presented very clearly and frankly. Dr. Claye asks why such methods are not more generally used throughout the country, and himself supplies the answer:

"Opponents of the procedures may maintain that it is because they consider the risk to mother and child to be too great; this is a line of reasoning to which the laity can listen with respect. But it is false. From the fact that in my pernocton–scopolamine series exactly half of the patients were the wives, daughters, or sisters of medical men, or were medical women themselves, I infer that at any rate with many doctors the medical arguments against relief of pain do not really weigh strongly. The real argument is the expenditure of time and energy in which the obstetrician is involved when he undertakes this work; in the majority of cases the practice cannot be made economically sound."

TREATMENT OF BRONCHIECTASIS

In his Harveian Lecture, which we publish in this issue at page 809, Mr. Tudor Edwards rightly points out that before tackling the problem of treatment for bronchiectasis it is essential to "evaluate the natural history of the disease." In other words, what is the outlook for the person suffering from bronchiectasis if the disease is untreated? The work of Lander and Davidson,[1] who have described a condition of dilated bronchi apparently unassociated with infection of the bronchial wall in areas of atelectasis, in no way alters the grave prognostic significance of "clinical" bronchiectasis. Mr. Tudor Edwards refers to two pertinent investigations—those of Findlay and Graham and of Roles and Todd—and attention may also be drawn to a paper by Cookson and Mason,[2] which provides morbid anatomical evidence for this view. Since medical treatment has proved to be unsuccessful, and as postural drainage and bronchoscopic aspiration are palliative only (but may add greatly to the comfort of the patient and those around him), there is full justification for the attempts to eradicate the disease by surgical methods. Collapse of the affected lung by artificial pneumothorax, phrenic interruption, and thoracoplasty having given unsatisfactory results, surgeons turned to more heroic methods—radical excision of the affected lung tissue. The operation of lobectomy was soon followed by pneumonectomy, and even successful bilateral lower lobectomies have been carried out, constant improvements in technique being followed by lower operative mortalities. The results of the comparatively large series which Mr. Tudor Edwards now publishes should encourage practitioners to detect bronchiectasis at a stage when surgery provides a complete cure at a risk which is almost insignificant. The operative mortality of lobectomy in the age group 4 to 16 (thirty-eight patients) was *nil*; it was 9.5 per cent. in the age group 16 to 20, and it rose steadily to 31 per cent. in the age group 40 to 50. Thus it would appear that every effort should be made not to miss the diagnosis of bronchiectasis in childhood, and surgical treatment should not be delayed. The late results in a large proportion of patients are excellent. When symptoms are present after operation this is very often due to persistence of diseased tissue in other parts of the lung, particularly in the lingula of the left upper lobe. With the experience gained in the past, complete bronchographical investigation and removal of the whole of the bronchiectatic area should lead to further reduction in the number of such cases. There is little doubt that the label "bronchitis" often masks bronchiectasis, which can only be detected by bronchography.

[1] *Brit. J. Radiol.*, February, 1938.
[2] *Edin. med. J.*, 1938, **45**, 844.

A CASE OF PELLAGRA

In view of the rarity with which pellagra occurs in this country, and the uncertainty concerning certain aspects of this disease, special interest attaches to the detailed report of an isolated case by Drs. J. G. Greenfield and J. MacDonald Holmes which appears at page 815 of this issue. Unusual features in this example are the early age of the patient and the apparent absence of any dietary error. The child, with his five healthy brothers and sisters, lived on a farm, and was fed on an ordinary mixed diet which included plenty of fresh vegetables, milk, and butter. The manifestations of pellagra appear to have been due to chronic gastritis associated with a complete achlorhydria which was refractory to injections of histamine. There was a satisfactory response to daily dosage with fresh brewer's yeast and hydrochloric acid supplemented with intramuscular injections of campolon, but after three weeks in hospital the child developed measles and died from bronchopneumonia two days later. On examination of the central nervous system Dr. Greenfield was able to demonstrate chromatolytic changes in many of the nerve cells, particularly in those concerned with motor function. In the brain the appearances collectively were those of the "central neuritis" of Adolf Meyer, a condition that has been recognized by earlier workers on pellagra. Of greater interest, because more controversial, are the changes reported in the spinal cord. Here Dr. Greenfield has found early degeneration, best demonstrated by the Marchi method, in the long fibre tracts, including the columns of Goll. The spinal roots were also similarly affected. In view of claims to the contrary in the past, it may be especially noted that the changes in the spinal cord bore no resemblance to those of subacute combined degeneration. No increase in lipofuchsin was observed in the ganglion cells nor were

any degenerative changes found in the blood vessels, which suggests that these appearances in some of the earlier cases in the literature were attributable to advanced age rather than to the disease itself. But it is possible that certain of the discrepancies in the hitherto recorded observations are due to the operation of different causative factors. In this connexion the present case provides valuable evidence, because it shows the part that may be played by derangement of gastric function in the causation of pellagra. The authors suggest, as the best working theory, "that pellagra is due to a deficiency of an extrinsic factor in the diet (nicotinic acid) or to a failure of assimilation of the factor, if it be present, owing to gastro-intestinal disease."

PROSTATIC HYPERTROPHY AND TESTOSTERONE

The occurrence of prostatic hypertrophy in the autumn of man's life coincides with the time of diminishing sexual function, and this long ago led to the belief that there was a causal relation between the two. As a result there arose the hope that any means of reviving the latter would have a beneficial effect on the glandular enlargement. With the introduction of testosterone it was natural, therefore, that its use in hypertrophy of the human prostate should be tried. Testosterone was early shown to exert a tonic or stimulant effect on human sexual function in the male and appeared to be the substance sought. Strong support for its trial soon emerged in the discovery that a hypertrophy of the prostate presenting several points of similarity with the human type could be produced in monkeys by treatment with oestrin, and that this effect could be inhibited by the simultaneous use of a male hormone.[1] These important facts at once became the foundation of new theories of aetiology, and established a rational theoretical basis for the use of testosterone in the medical treatment of the human disease. Testosterone has now been under therapeutic trial long enough for some estimate to be made of its practical value in human prostatism. A number of careful and critical studies have already been published, and from these it would appear that in a proportion of cases testosterone has a definite beneficial effect on the associated disturbances of micturition. But, as is to be expected of any new remedy, the percentage of successful results claimed varies considerably with different investigators. In a recent survey of his own results on forty-two cases of prostatism treated with testosterone, R. V. Day[2] observed a definite clinical response in 70 per cent., and in 50 per cent. it was very marked. In his series there was a decrease in hesitancy of micturition and in nycturia, an increased ability to void, with a freer stream and occasionally also a reduction in the quantity of residual urine. In contrast to this, Stimpfl's results,[3] though encouraging, were less dramatic. Stimpfl chose for medical treatment only those patients without prostatitis who derived little benefit from an indwelling catheter or daily wash-outs for two or three weeks. In a series of fifteen cases so selected he could claim a definite improvement in only four, although in these it was undoubted. In view, however, of the fact that practically all investigators agree that testosterone relieves the micturition difficulties of some prostatics, it is surprising to find an almost equal degree of agreement that no appreciable diminution in the size of the prostate is to be observed. Stimpfl, indeed, actually watched an increase in size through a suprapubic opening in one case treated with large doses of the hormone. It seems, therefore, that the precise mechanism of the beneficial action is different from that originally anticipated. The suggestion has been made that the good results obtained are due, not to any direct action on the prostate itself, but rather to a tonic effect exerted on the bladder musculature. In support of such a view it is claimed that testosterone gives rise to a demonstrable tonic hypertrophy, and, further, that an increase in the intravesical pressure can be shown after treatment with the hormone. There is a possible danger that large doses of testosterone may interfere with spermatogenesis in the healthy male, but this is of negligible importance in the elderly sufferer from prostatism. The greatest danger of this new form of therapy would appear to be that it tends by its simplicity to encourage the treatment of cases before a full diagnosis has been made. The signs and symptoms of simple prostatic hypertrophy may easily mask a slowly growing carcinoma. Hence R. V. Day rightly insists that before beginning sex hormone therapy there should be an adequate urological examination by a competent urologist. If this precaution is taken testosterone would appear to have real value, especially in the milder degrees of prostatism. It cannot, however, be regarded as a substitute for operation, nor is it certain at present that mild cases treated with testosterone will be enabled thereby to avoid surgical treatment at a later date.

[1] *Lancet*, 1936, **1**, 242.
[2] *J. Urol.*, 1939, **41**, 210.
[3] *Fortschr. Ther.*, 1938, **14**, 566.

SOCIAL HYGIENE AND REARMAMENT

The British Social Hygiene Council, which has now published its twenty-third annual report, was formed as the National Council for Combating Venereal Diseases, but as Sir Walter Langdon-Brown, its new chairman, says in a foreword, venereal disease is only a special instance of the evils resulting from a failure on the part of individuals to discover their role as members of the larger unit of society. The remedy is education of a positive and not merely a preventive kind. The outstanding needs in relation to the scheme of treatment under local authorities are said to be more continuous educational enlightenment, particularly among women, an almoner service at every treatment centre to follow up contacts and cases discontinuing treatment, a recognition that the service is as essential for the male patients as for the female, and positive health teaching and sex guidance for the adolescents

and young adults of both sexes. The proportion of women to men under treatment for gonorrhoea shows little change. The figures are, in England and Wales, 7,787 women and 29,250 men, and in Scotland, 1,457 women and 4,103 men. The total number of gonorrhoea cases under treatment has gone up slightly in England and Wales and diminished in Scotland, but for the first time for many years the number of attendances at the treatment centres has fallen—by over 17,000 in England and Wales, and in Scotland by close on 20,000. Attention is drawn to the important bearing which rearmament may have on certain aspects of social hygiene. There has been a great expansion of the Air Force, with the establishment of new training centres and aerodromes in what were predominantly rural areas. The same is true of munition factories. This redistribution of the population may well lead to an increase of sexual promiscuity and of venereal infection. Treatment centres are few and far between in the country districts where camps and factories have been set up, and facilities for guidance in sex behaviour are likely also to be lacking. It is considered that where, owing to these new conditions, an increase in social hygiene education and social service is needed, or new civil treatment centres are called for as a result of the establishment of service camps, their cost should be met by a grant from national funds rather than from local rates. The various problems call for consultation and action between the Ministry of Health and the defence Ministries on the one hand and voluntary organizations on the other.

GOOD LIGHTING

Two papers issued in March deal with good lighting. The first comes from the Factory Department of the Home Office and is entitled "Lighting in Factories." Attention is drawn to the fact that experience has shown that bad lighting is productive of accidents, damage to eyesight, insanitary conditions, and ill-health; and also has marked adverse effects on the quality and quantity of the work done by factory operatives. Section 5 of the new Factories Act requires for the first time sufficient and suitable lighting in all factories, and empowers the Secretary of State to prescribe standards. A committee he appointed to advise on this matter has drawn up a schedule of eight standards. In heavy type it is stated that these are minimum standards. They deal with general lighting of premises and yards, and with bench lighting. Special note is made of the necessity for the use of proper shades so that light does not shine into the unprotected eyes of the workers. The second paper was read at the annual meeting of the Medical Officers of Schools Association, and is now published in *Public Health*. It is by Mr. N. Bishop Harman, who took for his subject "The Role of Light in Education." He showed how the efforts of the school doctors to secure satisfactory lighting conditions for the children in the elementary schools of this and other countries have reacted in educating the authorities and the general public into a knowledge of the value of good light. Betterment of lighting in schools had shown the public the value of good illumination. In early days means of lighting were poor; now they are splendid. Then the difficulty was to get enough light; now the danger is that the child's eyes may be damaged unless the light is properly arranged. The danger of glare is being increasingly recognized, both in schools and also (as the Home Office circular shows) in factories. Mr. Bishop Harman's paper was received with something like enthusiasm by his audience, and it will repay reading. There is reference in it to some new lighting arrangements in the British Medical Association's House.

THE FISSURE OF ROLANDO

It is just one hundred years since the fissure of Rolando was so named by Leuret of Paris.[1] This tribute to an Italian anatomist has been a lasting one, since the fissure is now widely known by his name, and it is interesting to recall why the compliment was paid by a Frenchman to an Italian when Vicq d'Azyr[2], a fellow-countryman of Lauret's, had described the fissure beforehand and Rolando[3] himself had freely acknowledged the priority of Vicq d'Azyr in the matter. Gall and Spurzheim[4] had also described the fissure before Rolando. What then is the explanation of its designation after Rolando? Sydney Smith reminded us that "it is not the man who first says a thing, but it is he who says it so long, so loudly and so clearly, that he compels men to hear him; it is to him that the credit belongs." It was not, however, a question of recognizing or emphasizing the importance of the fissure which attached Rolando's name to it. Paul Broca[5] gave us the explanation many years ago. It seems that Leuret possessed an edition of the works of Vicq d'Azyr regarded as complete, but which "had been mutilated and falsified by an unscrupulous editor" so that the contribution on the central fissure was not known to Leuret. It was through this accidental circumstance that the name of Rolando became attached to the fissure.

Lord Horder will deliver the first Frederick Price Lecture in the hall of the Royal College of Physicians of Edinburgh on Monday, May 15, at 5 p.m. The subject of the lecture is "The Control of Disease."

The Rede Lecture will be delivered by Sir Edward Mellanby in the Regent House, Cambridge, on Friday, April 28, at 5 p.m. His subject is "Some Social and Economic Implications of the Recent Advances in Medical Science."

[1] *Anatomie Comparée du Système Nerveux*, Paris, 1839.
[2] *Traité d'Anatomie et de Physiologie*, Paris, 1796.
[3] *Della Struttura degli Hemispheri Cerebrali*, Turin, 1831.
[4] *Anatomie et Physiologie du Système Nerveux en général et du Cerveau en particulier*, Paris, 1810.
[5] *Bull. Acad. Méd.*, Paris, 1876, **5**, 824.

WAR WOUNDS AND AIR RAID CASUALTIES

The following is one of a series of lectures on the Treatment of War Wounds and Air Raid Casualties recently delivered at the British Postgraduate Medical School

MEDICAL ORGANIZATION IN THE FIELD

BY

Colonel J. M. WEDDELL, F.R.C.S.

The wounded are collected from the firing line by the regimental stretcher-bearers (non-medical personnel trained in first aid); the first field or shell dressing, and possibly temporary splints, are applied; and the wounded are carried or directed to the regimental aid post, where the medical officer of the unit is located.

Regimental Aid Post.—Here first aid is given; urgent haemorrhage is controlled by direct pressure or forcipressure, and in cases of absolute necessity by a tourniquet. Morphine is administered if necessary (the dose and time being noted on the field card). The patient is kept warm with waterproof sheet and blankets, and is evacuated as soon as conditions allow to the advanced dressing station by the stretcher-bearers of the field ambulance.

The Field Ambulance.—This is the first medical unit to receive the wounded. The field ambulances move in the rear of the fighting troops and, when contact with the enemy is made, one company establishes a post known as an advanced dressing station within reasonable distance of the regimental aid posts.

Advanced Dressing Station.—The surgical possibilities here are very limited, and consist in the control of haemorrhage, the splinting and extension of fractures, if not already carried out, and measures for the prevention of shock. Dressings and splints should be examined, and if satisfactory left alone: morphine is administered if necessary, and the dose and time entered on the field card. The advanced dressing stations are situated well forward so as to be in touch with the regimental aid posts, to save the stretcher-bearers carrying for long distances, and, of necessity, are often in the zone of fire. In stationary warfare they are frequently in dug-outs.

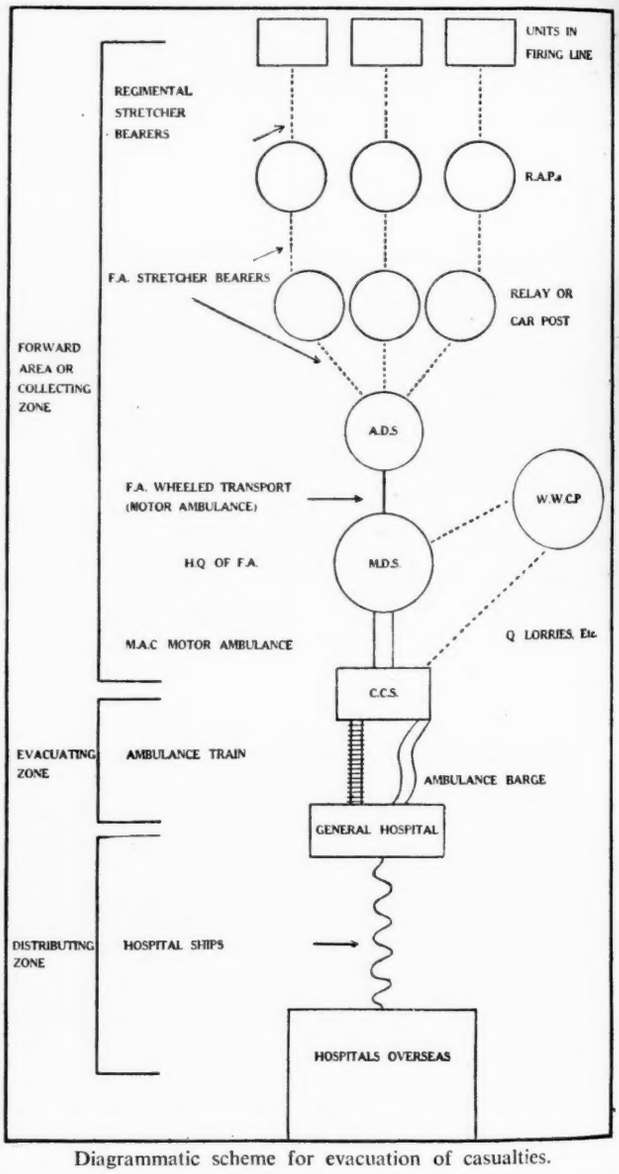
A Walking Wounded Collecting Post.—This may often be arranged with advantage when heavy fighting is expected. This should be close to the advanced dressing station and near a road leading to the casualty clearing station for evacuation.

Main Dressing Station.—This is the next medical post, which is established by the headquarters of the field ambulance. In France the main dressing stations were as a rule two to six miles behind the fighting line. Here emergency operations can be carried out, such as ligation of bleeding vessels, amputation of shattered or crushed extremities, and the closure of open sucking chest wounds. A dental surgeon is also here to assist in the emergency treatment of maxillo-facial injuries. More active measures for the prevention and treatment of shock are possible, and infusions or transfusions of blood may be given. Here the routine injections of anti-tetanic serum are given and noted on the field card.

In these days of increased mechanization it may be possible to cut out one or even both of these dressing stations. Anything that will lessen the time of evacuation and avoid unnecessary unloading and reloading of patients in ambulances and get them more quickly to the operating centre must be of great benefit.

The Casualty Clearing Station

The casualty clearing station is the principal surgical unit and operating centre in the forward area. These units form the connecting links between the forward area and the hospitals on the lines of communication. They are equipped with operating theatre, *x*-ray department, laboratory, etc., so that all major surgical operations may be carried out. In France the C.C.S.s were usually ten to fifteen miles behind the firing line, beyond the range of severe shell-fire. They should be on or near a railway line, so that evacuation by ambulance train can be carried



Diagrammatic scheme for evacuation of casualties.

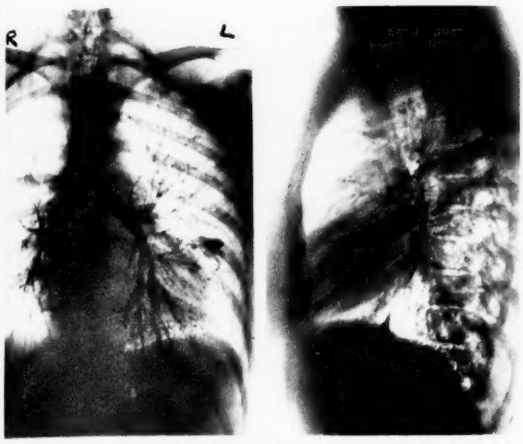


FIG. 1.—Antero-posterior and lateral bronchograms showing bronchiectasis of the lingular process of the left upper lobe.

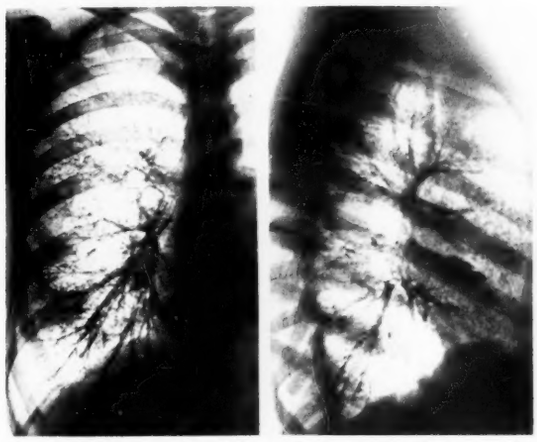


FIG. 2.—Antero-posterior and lateral bronchograms showing bronchiectasis of the right middle lobe only.

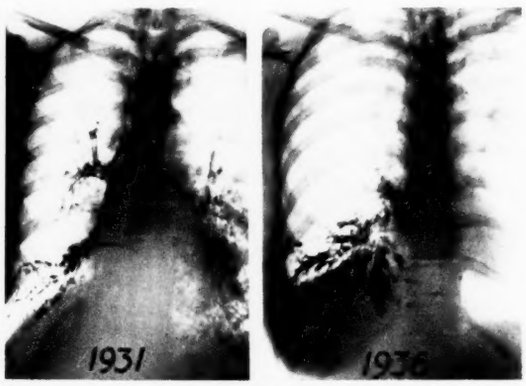


FIG. 3.—Right lower-lobe bronchiectasis (1931) secondary to an adenoma, which is indicated by a filling defect in the main bronchus. The second bronchogram (1936), five years after removal of the adenoma, shows restoration to normal of the lumen of the bronchus but extension of the bronchiectatic process.

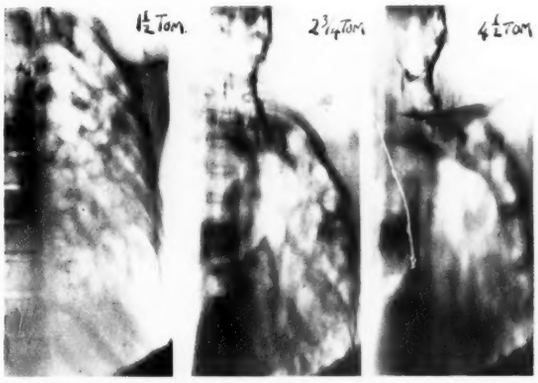


FIG. 4.—Tomograms showing infected congenital cystic disease involving the whole of the left lung. The tomogram on the right shows the hypertrophied right lung extending over the upper third of the mid-line.

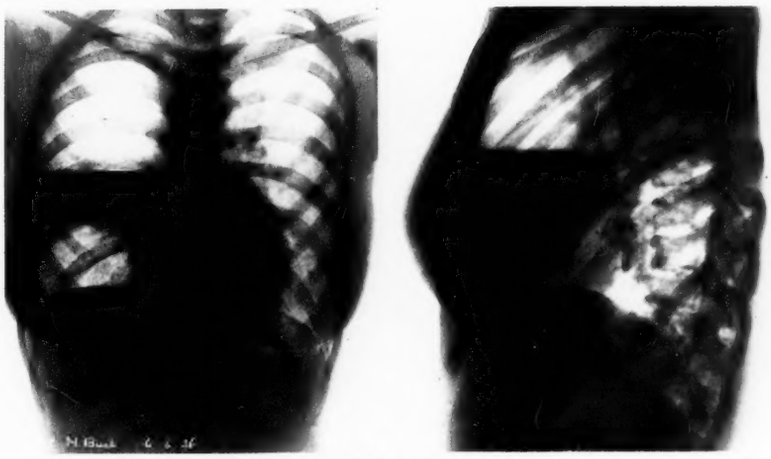


FIG. 5.—Radiographs showing antero-posterior and lateral views of a large single infected congenital cyst of the right upper lobe. Note the fluid level.

A. TUDOR EDWARDS: MODERN PRINCIPLES OF TREATMENT IN BRONCHIECTASIS

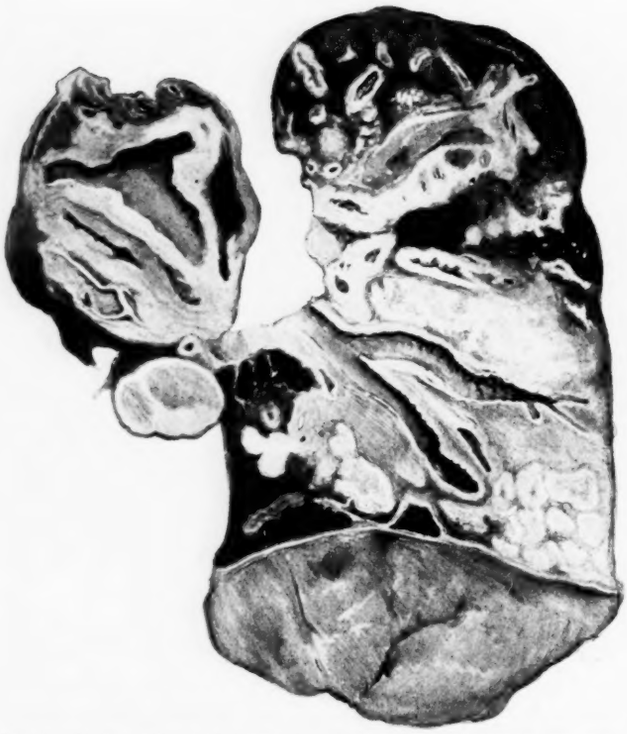


FIG. 6.—Right middle and lower lobes after lobectomy, showing advanced bronchiectasis secondary to a chronic middle-lobe abscess.

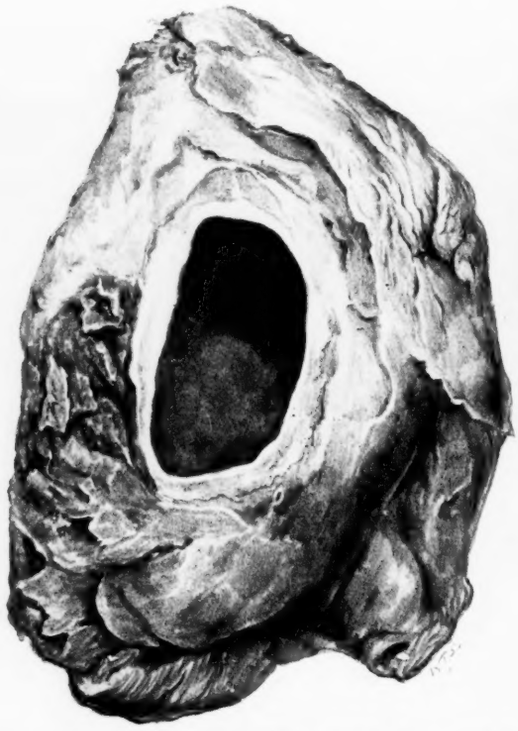


FIG. 7.—Large single infected congenital cyst after lobectomy of the right upper lobe in the case referred to in Fig. 5.

FIG. 8.—Left lung after pneumonectomy in the case referred to in Fig. 4.

DONALD COURT: TUBERCULIN "PATCH TEST" AND INTRACUTANEOUS MANTOUX TEST IN CHILDHOOD

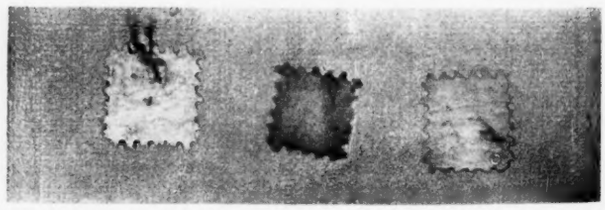


FIG. 1.—Three squares of filter paper on adhesive plaster; the outer squares are saturated with undiluted old tuberculin, the centre square (control) with glycerin broth.

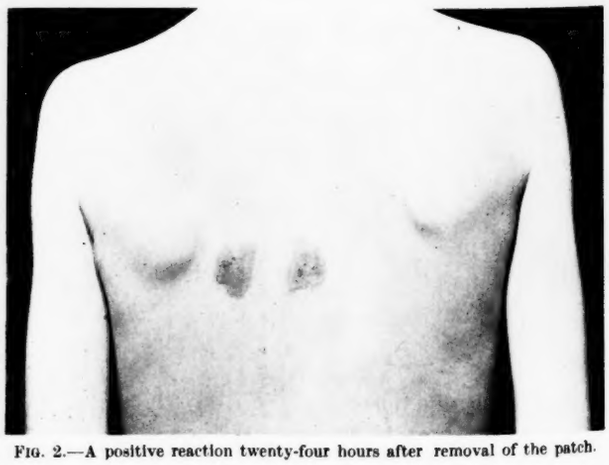


FIG. 2.—A positive reaction twenty-four hours after removal of the patch.

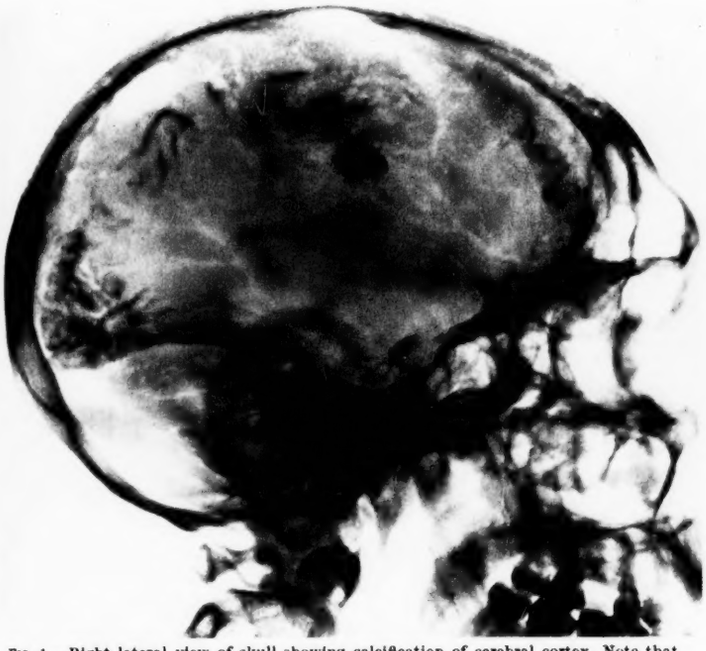


FIG. 1.—Right lateral view of skull showing calcification of cerebral cortex. Note that calcification is best marked in the occipital region, and double contours represent some of the sulci.

FIG. 2.—Postero-anterior view of skull demonstrating the marked hemiatrophy of the brain and some atrophy of the skull on the same side.

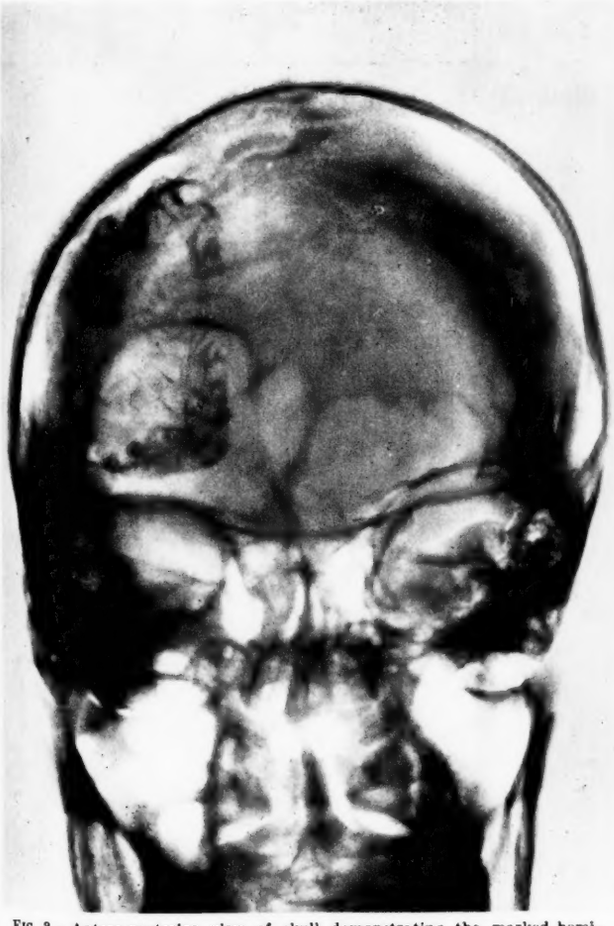


FIG. 3.—Antero-posterior view of skull demonstrating the marked hemiatrophy of the brain and some atrophy of the skull on the same side.

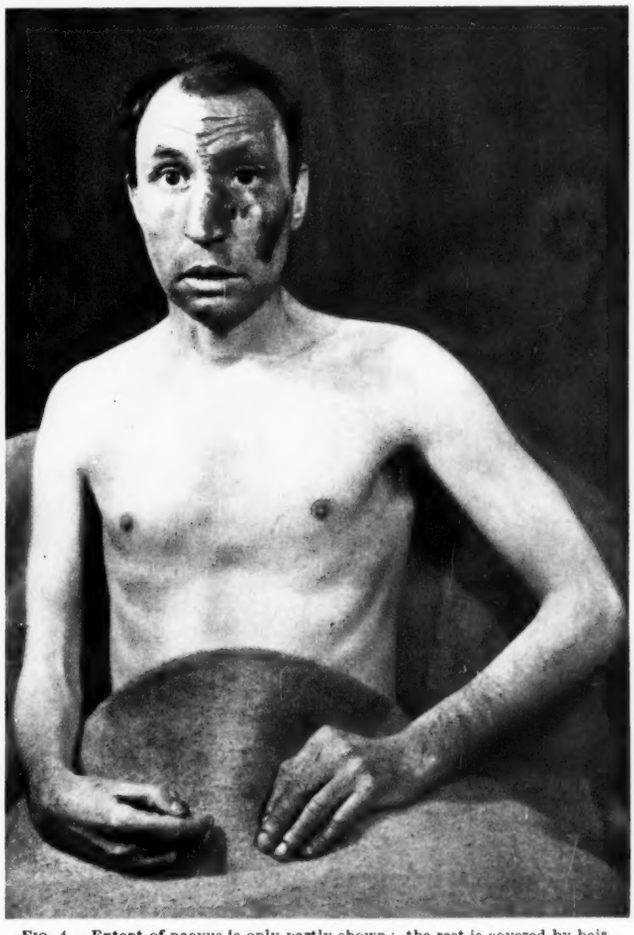


FIG. 4.—Extent of naevus is only partly shown; the rest is covered by hair. Note posture and wasting of right upper limb.

J. G. GREENFIELD AND J. MacDONALD HOLMES: A CASE OF PELLAGRA: THE PATHOLOGICAL CHANGES IN THE SPINAL CORD

FIG. 1.—Photograph of the patient showing skin lesions.

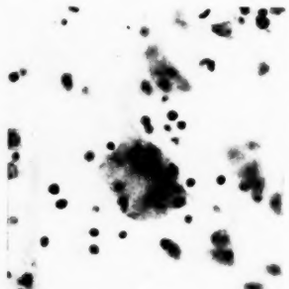


FIG. 2.—Betz cell from the motor cortex, showing intense chromatolysis (Meyer's central neuritis).

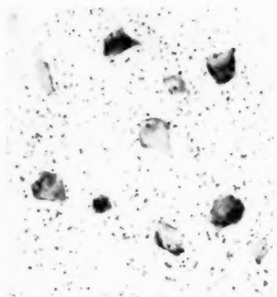


FIG. 3.—A group of motor cells from the anterior horn of the lumbar cord, showing severe degenerative changes.

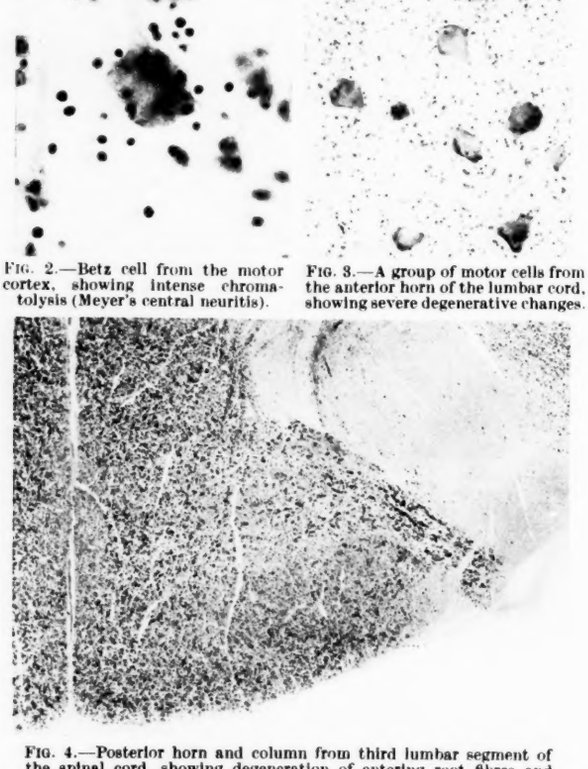


FIG. 4.—Posterior horn and column from third lumbar segment of the spinal cord, showing degeneration of entering root fibres and scattered degenerated fibres in the posterior columns.

THOMAS MOORE: METASTATIC RENAL INFECTION

FIG. 1.—The cavity containing the pyelographic medium can be seen communicating with the middle calix.

FIG. 2.—The cavity is seen to be much smaller.

FIG. 3.—The cavity has disappeared. The kidney has returned to normal.

out. They are designed to take 200 patients normally, but can expand to receive very many more. In the great war eight to ten operating teams were often working simultaneously and continuously for several days.

It may be of interest to recall some of the numbers that were dealt with in C.C.S.s in the great war. In the Battle of the Somme in July, 1916, thirteen C.C.S.s of the 4th Army received and treated 37,000 wounded in three days. It is obvious that at such times of heavy fighting operations for primary suture are quite impossible. It is hoped during more normal times to be able to retain the serious cases—abdominal wounds and chest wounds, severe fractures, and cases of primary suture—for seven to ten days, but at any time a mass clearance of cases may be essential. It was found an advantage to arrange C.C.S.s in groups of three: cases could then be diverted from one C.C.S. when full and another opened up, so as to give the surgical staff a chance to compete with the operative work and arrangements for evacuation.

The usual means of evacuation from the C.C.S. is by ambulance train. The C.C.S. is a mobile tented unit, though often in the stationary trench fighting of the great war units remained in the same position for months and were frequently housed in buildings. They are composed of a heavy and a light section. The light section can be moved rapidly and established in a fresh area, and carry on until the main part of the unit has evacuated its cases and moved up; or it can be used as a mobile surgical team to reinforce another unit in times of heavy fighting.

General Principles

To sum up the general principles of surgery in the field. The main operating centre is the casualty clearing station. These units may be situated ten to fifteen miles behind the actual fighting line, but experience has shown that with modern motor ambulance transport the extra time taken to get the wounded a few miles further back than the main dressing stations is only a fraction of the time taken in getting them from the firing line to the field ambulance. It is well worth while to take this extra time to get the men to an area which will be more or less free from enemy fire, where more elaborate and permanent arrangements can be made for resuscitation and operation, and, more important still, where serious cases can be retained for some days at least and efficiently nursed before being evacuated further down the lines of communication.

In the forward or field ambulance area, with the exception of a few emergency operations, treatment is based on rapid evacuation and on general treatment of the patients to control haemorrhage and prevent shock, with the idea of getting them to the operating centre as rapidly and in as good a condition as possible.

Evacuation by Air

At the present time there are no authorized air ambulance units, but evacuation by air has been employed with success in India, Iraq, and other places. While there are great advantages in this method there are also certain difficulties: first, the number of casualties and planes likely to be available; secondly, landing grounds are unlikely to be available further forward than the C.C.S. area, and most of the time taken up in evacuation is in getting the patients from the firing line to the field ambulance. With the further development of the helicopter type of machine we may be considerably nearer the solution of this problem.

Special Hospitals

Lastly, the establishment of hospitals for the segregation of special types of cases, both abroad and at home, is of the greatest value. The most numerous of these are the orthopaedic cases and nerve injuries, many of which require months of hospital treatment before cure. Special hospitals are also required for maxillo-facial injuries and chest and head wounds.

RESEARCH IN LUNACY AND MENTAL DEFICIENCY

REPORTS TO THE BOARD OF CONTROL

The twenty-fourth annual report of the Board of Control for the year 1937 again appears in two parts. The first, which dealt with administration and statistics, was reviewed in our issue of November 12, 1938 (p. 1006). There has now been issued a supplement,[1] a far more bulky volume, comprising mainly the reports from a number of mental hospitals on their research and other scientific work, and what are called the "entries"—really lengthy and detailed memorandums—made by the commissioners of the Board on their visits to the different institutions.

Chronic Infective Processes and Mental Symptoms

The communications from the clinics and laboratories of mental hospitals number seventy-two. They are headed by a long and important report from the Joint Board of Research for Mental Disease, City and University of Birmingham. It runs to nearly 100 pages, and is of such a character that one hopes that with previous reports from the same quarter it may find separate publication instead of being buried in an unwieldy annual volume. It is concerned once again with the influence of chronic infective processes in relation to mental symptoms. These workers at Birmingham, headed by Dr. T. C. Graves, chief medical officer of the city mental hospital committee, contend that although other factors predisposing to mental disorder may be present the existence of sepsis should never be disregarded. When properly directed and applied, the removing of septic and irritating areas, the conversion of closed into open sepsis, and the treatment of residual sepsis have been found to offer the greatest hope for alleviation of the suffering of the patient, and they hold that it should be used as a primary therapeutic measure. But the work must be done thoroughly. "There is no other branch of medicine or surgery," writes Dr. Graves, "in which the work can be more incompletely done and therefore made ineffective." The argument is supported by thirty-nine detailed case histories. These include several cases in which heredity and familial disease were conspicuous, and yet the treatment of the septic disease produced in some cases a substantial recovery and in others a distinct amelioration of the mental disorder. Some of the patients had suffered head injury or were subjects of alcoholism or gastric disturbance, all of which may be precedent to mental disorder, but here again the removal and drainage of the septic focus was efficacious. The route by which influenza exerts its debilitating action on the nervous system is declared to be by the causation or lighting up of sepsis. In cases of insomnia, with or without headaches, the treatment of the sepsis has been followed by the disappearance of symptoms hitherto proof against sedatives and hypnotics.

The Birmingham work is referred to in the general summary prefacing the reports, where it is pointed out that, impressive as such a statement undoubtedly is, the subject is one upon which opinion as yet is far from agreed. These thirty-nine cases were, after all, selected

[1] Part II. H.M. Stationery Office. 8s. 6d. net.

ones, and relatively young, the average age being 34. It is suggested that the validity of the contention might be better examined if the treatment were applied in a consecutive series of admissions for a year and the cases studied and analysed two years afterwards. Not many of the communications from other institutions make direct allusion to this subject, but the report from St. Andrew's, Northampton, states that dental sepsis was looked for carefully in every case on admission, and evidence of definite apical foci of infection was found in 39 per cent. In some cases of dental sepsis the patients at first resented and refused treatment, but with the establishment of confidence beneficial results, both physical and mental, followed the treatment.

Insulin and Cardiazol in Schizophrenia

Treatment by insulin and cardiazol is reported on from several institutions, notably from West Ham Borough Mental Hospital, where a high percentage of remissions has followed the use of Sakel's insulin shock method. Some account has already appeared in this journal (1937, **1**, 745) of the results obtained at that hospital. The general experience there is that "katatonics and paranoids do very much better than hebephrenics and simples." Not a single good result was obtained in cases of pure, simple dementia praecox. At the Three Counties Hospital in Bedfordshire twenty-two cases of schizophrenia were treated during the year under review, and of these eight were discharged following insulin treatment alone, and another four following insulin and cardiazol combined. The duration of the psychosis in the recovered patients had ranged from six months to two years. Experience at Cane Hill Hospital, Coulsdon, confirms the opinion that cardiazol is of value, even in long-standing cases in which complete remission can hardly be expected. At Dorset County Mental Hospital soneryl (a form of barbituric acid) has been used, and the medical officer in charge states that by deliberately introducing a high degree of tolerance for the drug, by steadily increasing the dose, and then by abruptly stopping the medication, it is possible to produce convulsions in most cases of schizophrenia.

Among various methods of treatment other than psychotherapeutic is the use of daily injections of histamine in chronic and long-standing cases of melancholia. This has been done at Whittingham (Lancashire), apparently with some success, and at Lancaster oestrin therapy has been applied in involutional psychosis. Seven cases of mental disorder associated with the climacteric in the female were subjected to treatment by ovarian preparations, and three recovered, one was relieved, and two showed slight improvement. The value and limitations of treatment with benzedrine sulphate in cases of depression are mentioned in several of the reports. From Hertford it is stated that its effect has been beneficial in a considerable number of patients in the depressive phase of a manic-depressive psychosis. The disappointing aspect is that the improvement is maintained only for as long as the drug is being administered. The special value of evipan anaesthesia is mentioned in the report from Warwick; it is stated that in isolated cases of sudden excitement and noisiness its usefulness is somewhat greater than that of morphine and hyoscine, since its effect is more certain, it is non-habit-forming, and it does not give rise to tolerance. Pentothal acid as a new basal anaesthetic with anti-convulsant and anti-epileptic properties is mentioned approvingly in a report from Dorset, and the use in epilepsy of such drugs as mandelic acid and prominal is described in various communications. In mental hospital practice nothing is trivial, and one simple measure for combating insomnia, reported from the Isle of Wight County Mental Hospital, may be mentioned. This is the substitution of good spring mattresses for the usual horsehair ones. The result has been a diminution in the use of sedatives.

Out-patient Clinics

Several of the communications refer to psychotherapy, especially child guidance, as practised at out-patient clinics. On the Isle of Wight there are four centres for mental welfare work, and a total of 203 patients were dealt with during the year. At three out-patient centres at Sheffield and Rotherham the number of new cases during the year was 422. The commissioners refer to the excellent out-patient work at St. Albans Nerve Clinic, attached to Hertfordshire County Mental Hospital, where the medical staff includes four psychotherapists in outside practice. Other special investigations referred to in the report are those at the Royal Eastern Counties Institution, under Dr. Penrose, into the family histories of patients of certain types, and at Stoke Park Colony, Stapleton, near Bristol, under Professor Berry, into the causation and inheritance of mentality, whether normal or abnormal. The commissioners, referring to their visit to Maudsley Hospital, state that one of the striking features was the varied nationality, training, and outlook of the many doctors attached to the various departments in one capacity or another. An appendix gives a full list of the institutions in the country, provided or approved. It appears that there is only one county or county borough mental hospital exclusively for private patients—Scalebor Park under the West Riding authority. The report is packed with information of various degrees of value, but its form is merely that of a file of innumerable documents, and, in the absence of an index, its 600 pages are as difficult to find one's way about in as anything that has come from the Stationery Office.

LONDON COUNTY COUNCIL HOSPITALS

MEDICAL REPORTS ON SPECIAL SUBJECTS

The seventy-five general and special hospitals of the London County Council furnish an opportunity for a large amount of clinical investigation of a special kind, and the results are embodied in a Medical Supplement to the Annual Report.[1] In the latest of these supplements, which deals with 1937, first place is given to the radiotherapeutic clinic at Lambeth Hospital, where during the year 614 new patients, nearly all of them suffering from malignant tumours, were treated. A series of analytical tables shows, for cancer in different situations, the number of patients on whom treatment was started in each year since 1930 and the number surviving in each subsequent year. It is a depressing record, but it must be said that the tables are rather weighted against optimism, because all untraced patients are recorded as dead, and no patient is described as having died of intercurrent disease unless a post-mortem examination had been performed or a statement obtained from the doctor certifying the death showing that no signs of recurrence of cancer were present.

A few figures may be cited of patients who were treated in 1932 and were alive at the end of five years. Of twenty-eight patients with carcinoma of the tongue, whatever the stage, none was alive; of nine with carcinoma of the tonsil two were alive; of fourteen with carcinoma of the floor of the mouth two were alive; and of fourteen with carcinoma of the oesophagus none was alive. In carcinoma of the breast, of seven patients in Stage I who were treated four were alive; of thirty-seven in Stage II three were alive, and two out of fourteen in Stage III. The figures for rodent ulcer are more encouraging. Out of twenty-six patients treated in 1931 exactly half were known to be alive six years later. Trial is now being made of the use, coincident with *x* rays, of short-wave diathermy, and while it is too early to speak of results

[1] *London County Council. Annual Report, 1937.* Vol. IV, Public Health. (Part III). Medical Supplement to the Report on the Hospital Services. Westminster: P. S. King and Son, Ltd. (5s.)

the impression is that skin reactions are less severe for any given effect on the tumour. At the same hospital there is a radium centre for carcinoma of the uterus, and here again a bad sample of cases has to be treated. Of 117 cases of cancer of the cervix which came for treatment during the year, only thirty-four were earlier than Stage III.

Maternal Deaths in County Hospitals

As usual, a long report is forthcoming on maternal deaths in the Council's hospitals. The year 1937 saw the highest number of births in those institutions and the lowest number of maternal deaths. The number of confinements was 19,614. The mortality figures are carefully dissected having regard to causes, because the previous lumping together of figures not analogous has led to misunderstanding. The number of deaths of women who had been confined in the general hospitals after the twenty-eighth week was forty-nine, and of this number thirty-one were due to the pregnancy or confinement and eighteen to associated causes. Among women who were confined before admission (after the twenty-eighth week) there were twelve deaths. There were also twenty-five deaths in the 3,870 cases treated in hospital for abortions and moles. Sepsis remains the most frequent cause of maternal death, but it shows a welcome tendency to decrease. The rate is now only 0.54 per 1,000 births, whereas in 1934 it was 1.18, and in 1931 2.00. Only two deaths in two years have occurred from sepsis after normal labour. The use of sulphanilamide preparations has some of the credit, but some must go to the greater experience in the control of sepsis in the wards.

A report from the puerperal sepsis unit at the North-Western Hospital shows that during the year 119 primiparae and 148 multiparae were admitted suffering from puerperal sepsis, and there were fourteen deaths. A synopsis of these deaths is given, showing in every case the previous history, method of delivery, diagnosis on admission, complications and course of disease, bacteriology, and post-mortem findings. In treatment prontosil and sulphanilamide dominated the field. The protean character of the disease, the observed recent fall in fatality apparently unrelated to therapeutic measures, and the small number of cases coming under observation each year, all militate against the observance of the conditions requisite for a proper test of the efficacy of the new drug. An attitude of reserve is maintained until adequate numbers have been treated and the conditions governing success or failure are more clearly understood.

Cardiac and Thoracic Surgery

The clinic for surgery in cardiovascular diseases at Lambeth Hospital is continuing its work. Here eleven operations of cardio-omentopexy, two of cardio-pneumonopexy, and four of pericardiotomy were performed. All the patients on whom these operations were done and who have survived six months or longer are better and most of them symptom-free, and the conclusion is reached that the application of cardio-omentopexy to a proportion of that enormous group of patients who are suffering from a deficient blood supply to the heart is justified. Thoracic surgery has now been centred at St. Mary Abbots Hospital, where as many as 15,000 *x*-ray films were taken. Numerous major operations were performed both for tuberculous and non-tuberculous chest conditions. Of the 177 patients treated actively the greater proportion on the female side were cases of tuberculosis, while in the male wards malignant disease and pulmonary suppuration predominated. An interesting account of the work at the two urological units, the two diabetic clinics, and the arthritic unit also appears.

Serological Work on Scarlet Fever

Owing to the mild character of scarlet fever in recent years, the varying conditions in which patients are nursed in different parts of the country, and the lack of any really exact method of standardizing the potency of antitoxin, there is at present nothing like the agreement among the clinicians that exists in the case of diphtheria antitoxin. It is stated that probably an increasing number of medical officers in the London fever hospitals are in favour of antitoxin for practically all cases, mild or severe. They believe that by abolishing or abating the toxaemia the antitoxin leaves the patient better able to cope with the activities of the causal organisms themselves as distinct from the toxin which the organisms produce. One research worker in the present report describes his serological classification of the haemolytic streptococcus in the scarlet fever material with which he had to deal. Out of 172 typed cases, sixty-three were in Type I and twenty-seven in Type II. He draws attention to the frequency of early adenitis in Type I infections. Another study of the serological types of *Streptococcus pyogenes* in scarlet fever is published, and concludes with the statement that more than half of all cases of scarlet fever are due to infection with this organism Types I to IV, although the relative proportion of those types varies from year to year. Type I infections are more severe than Type II, and are followed by a higher incidence of suppurative complications; Type IV, on the other hand, produces a mild infection. In the "type-specific" wards the serological type of the infecting bacillus remains unchanged during the patient's stay in hospital, whereas in "open" wards change of type occurs not infrequently.

PREVENTION OF BLINDNESS

The meeting of the National Committee of the International Association for Prevention of Blindness arranged by a subcommittee of the Hungarian Society of Hygiene was held in the Semmelweis Hall of the Royal Society of Medicine, Budapest, on March 14. Professor EMILE DE GRÓSZ, president of the committee, discussing the sight-saving activities generally adopted, said that the preventive measures were accurately described fifty years ago in a booklet by Fuchs, then professor at Liége, later at Vienna. In Egypt preventive measures diminished the enormous rate to one-third, and this was due to the work of a great organizer, MacCallan. The most effective method consisted in creating eye hospitals, ophthalmic departments, and dispensaries, aided by popular education and the achievement of a higher social standard. The Hungarian legislation against trachoma of 1886–1903 was based on the same principles. Dr. G. HORAY reviewed the diseases, widespread among the population, which cause blindness or defective vision—syphilis, tuberculosis, trachoma. Statistics drawn up on the basis of patients treated at the Eye Hospital No. 1 of the Budapest University were shown. Dr. A. GAÁL of the State Hygiene Institute discussed the preventive part played throughout the country by the public health organization known as the Green Cross Movement. Lastly, Dr. I. CSAPODY gave a lecture on sight-saving classes. Professor JULIUS DE DARÁNYI, president of the Hygiene Society, expressed the hope that he would be able to secure active municipal support for the work of that society.

The eighteenth annual meeting of the well-known Journées Médicales de Bruxelles will be held at Liége from June 24 to 28 under the presidency of Professor Ernest Renaux, and in association with the International Water Exhibition and the opening of the Albert Canal. The scientific subjects to be discussed include the following: chemical investigations relating to the human blood system; the regulation of the circulatory control of the brain; the treatment of the cerebral circulation (from the standpoint of internal medicine); the psyche and the circulation; these and certain discussions will be held in conjunction with the German Neurological and Psychiatric Association. Other main topics for the meeting are focal infection, and loss of teeth as a sign of nutritional inadequacy. Further information can be obtained from the general secretary, Dr. René Beckers, 141, Rue Belliard, Brussels.

Reports of Societies

NEUROGENIC ORIGIN OF PEPTIC ULCERATION

At a meeting of the Liverpool Medical Institution on March 30, with the president, Dr. WILLIAM JOHNSON, in the chair, Mr. F. RONALD EDWARDS read a paper on the neurogenic origin of peptic ulceration.

Mr. Edwards said that the incidence of duodenal ulceration was undoubtedly increasing, due to the stress and strain of modern life. The psychic factor was an important one, as had been emphasized in the past. Hyperchlorhydria was the constant factor which gave rise to a duodenitis, followed by ulceration. The hyperchlorhydria was an excessive secretion of the gastric juice, and a series of seventy-five cases were investigated from this point of view. This hypersecretion could be produced experimentally either by the direct action of histamine on the gastric glands or by stimulation of the vagus nerve somewhere in its course. Mr. Edwards did not consider that there was an excess of histamine circulating, which would cause a constant hypersecretion. The typical response of the stomach to stimulation of the vagus and of the parasympathetic areas in the anterior hypothalamus was described. The parasympathetic tract was then traced back to the area frontalis granulosa and the premotor area. The association of duodenal ulcers with intracranial lesions was demonstrated with reference to the work of Harvey Cushing and Norman Dott.

The anatomy of the vagus in the upper abdomen and the effects upon the stomach of sectioning the nerve at different levels were described. The diminution of the acid flow from the stomach in the normal healthy animal was very slight, but it was suggested that section of the vagus nerves in duodenal ulcer cases with the "hypersthenic gastric diathesis" would remove the higher cerebral control of the secreting area of the stomach, reduce the hyperchlorhydria, and so allow the ulcer to heal. The permanence of the result, however, could only be determined by the observation of cases of vagotomy in man. The duodenal ulcer syndrome could not as yet be reproduced in animals. The section of the vagus nerve should be in (1) the anterior branch, below the level where the pyloro-hepatic branch of the nerve comes off, and (2) the posterior branch below the level where the branch to the coeliac ganglion arises. The operation was perfectly satisfactory in a series of animals. Previous operations on the nerves of the stomach were described, and details given of the method of the operation, which is a modification of Latarjet's procedure. The method was, of course, only applicable to the non-stenosing ulcer case. The work had all been experimental and, before applying the operation to man, discussion by members of the institution was called for.

General Discussion

In the discussion which followed Mr. CHARLES WELLS referred to the experimental work of McCrea, and also to Wilson Hey's operation, in which all the vessels to the stomach are ligated. This results in a lowering of the acidity, and he wondered whether the vagus could possibly be interrupted, either intentionally or accidentally, in this procedure. Mr. Wells then referred to the hormone factor in gastric acidity, and reported his experience with a type of partial gastrectomy in which the pyloric antrum is left in position, with the idea of preventing the occurrence of pernicious anaemia as a sequel to the operation. The hormones elaborated in this portion of the stomach caused the continued secretion of a large amount of free acid, and recurrent ulceration was common. This might be completely relieved in a majority of cases by the subsequent removal of the pyloric antrum. From this observation, and from the knowledge that the duodenum was better able to withstand acid than the jejunum, he had already concluded that an operation of the Billroth I or Schoemaker type was best in duodenal ulceration. That this operation sometimes failed to give relief was thought to be due to the continued activity of the well-known reflex of psychical secretion of hydrochloric acid. It now occurred to him as not unreasonable to suppose that this effect would be negatived by interruption of the vagus. If this proved in practice to be the case the operative attack on duodenal ulcer might very well be given a fresh impetus. A further study of the recorded cases in which vagotomy had been combined with some other procedure seemed to be called for.

At the same meeting Dr. S. B. DARBISHIRE read a short paper on the pepsin factor of the gastric juice in relation to ulceration, and Dr. H. WALLACE JONES a paper on the evolution of Lead IV in the electrocardiograph and its clinical value.

At the meeting of the Liverpool Medical Institution on March 16, with the vice-president, Dr. H. WALLACE JONES, in the chair, Dr. C. V. HARRISON read a paper on a pathological study of hypertensive and ischaemic heart disease. The paper was based upon a conjoint clinico-pathological study. The cases were seen during life by Dr. Wood, and after necropsy the hearts were examined by a standard technique. The coronary arteries were injected with barium sulphate and stereoscopic radiographs were taken; the hearts were then "cleared" according to the technique of Gross, and histological examination of the coronary arteries and myocardium was subsequently carried out. The following conclusions were drawn: (1) that by this technique hypertensive and ischaemic heart disease give two totally different radiological pictures, but may coexist in certain cases; (2) that coronary atheroma has no effect upon the lumen of the vessels until it becomes severe; (3) that hypertension causes the coronary arteries to enlarge *pari passu* with the hypertrophy of the heart; (4) that heart weight in hypertension increases with the duration of the disease and the degree of cardiac failure; (5) that hypertension alone never gives rise to focal myocardial fibrosis; and (6) that coronary atheroma alone can lead to cardiac hypertrophy.

At the meeting of the Society of Public Analysts and Other Analytical Chemists, held on April 5, B. S. Platt, Ph.D., M.B., Ch.B., was elected a member. A paper by S. M. L. TRITTON, F.I.C., on the evaluation of hydrogen peroxide recorded that hydrogen peroxide, as stabilized for pharmaceutical and surgical use, had been found to vary in its efficacy. Eight stabilized and three unstabilized peroxides were titrated by permanganate, thiosulphate (after liberation of iodine), and titanous chloride. Titrations correlated well for the unstabilized peroxides, but the titanous chloride figures were low for all the stabilized peroxides, even when the stabilizer present was sulphuric acid. This might be taken as an indication of the formation of addition compounds between the peroxide and the stabilizer, which were not easily reducible by titanous chloride but which could be oxidized by permanganate. It was found that the titanous chloride titration could be completed with permanganate. A method employing catalase was evolved for estimating ease of decomposition of hydrogen peroxide. If the stabilizer present had catalase-inhibiting properties or produced a *p*H unfavourable to catalase the efficacy of the hydrogen peroxide would be seriously impaired.

Sir John Kennedy, commissioner for the British Red Cross, and Major-General F. G. Fitzgerald (late R.A.M.C.), who accompanied him on his second visit to the Spanish refugee camps at Perpignan, have nothing but admiration to express for the way in which the French authorities are tackling the problems of housing and caring for thousands of destitute, war-weary men. Sir John Kennedy's latest report stresses the favourable impression he and General Fitzgerald received of all the hospital facilities. Four hospitals in Perpignan and a hospital ship at Port Vendres provide accommodation for several thousands, while each camp has a field hospital where less serious cases are attended to. The staff of doctors and nurses is more than adequate, and from a medical point of view there seems no cause for anxiety provided there is no bad epidemic of enteric or dysentery.

Local News

SCOTLAND

Five Thousand Additional Beds for Air Raid Casualties

About 5,000 extra hospital beds are to be made available in Scotland as the result of a decision to erect hutted annexes to eleven selected institutions. This is part of the Government's arrangements for the hospital treatment of air raid casualties in the event of war. In a communication to these institutions the Department of Health states that the huts will be 144 feet by 24 feet and will each contain thirty-six beds together with the usual ancillary accommodation. The erection and maintenance of the huts will be undertaken by the Office of Works and no cost will fall upon local authorities or hospital managers, either for the provision of equipment or for any additional fire insurance in respect of the existing buildings by reason of the erection of the huts. Hospital authorities are asked to agree to the proposal and to allow the building to proceed at once, leaving the formalities connected with the leasing of the land, etc., to be conducted concurrently. The institutions concerned are: local authority hospitals—Robroyston and Mearnskirk, Glasgow; Hairmyres, Lanarkshire; and Ashludie, Dundee; voluntary hospitals—the Astley Ainslie Hospital, Edinburgh; Victoria Infirmary Auxiliary Hospital, Busby, Glasgow; Falkirk Royal Infirmary; Stirling Royal Infirmary; asylums—Gartloch, Glasgow; Bangour, Edinburgh; and Larbert.

Scottish Nursing Auxiliaries

The Scottish Central Emergency Committee for the Nursing Profession is compiling a register of trained and assistant nurses in Scotland with the help of the College of Nursing. There is also a scheme for training nursing auxiliaries recruited from among women who have had no previous instruction. This scheme is to be carried out by local committees under the superintendence of local authorities throughout Scotland. The training will include: (1) a course in first aid on the lines of courses provided by the British Red Cross Society and the St. Andrew's Ambulance Association; (2) a short period of A.R.P. training in the work of a first-aid post; and (3) a short course of lectures and practical work to be carried out in one of the large hospitals to give the auxiliary nurses an elementary knowledge of hospital routine. Volunteers for this training should make application to the Scottish Central Emergency Committee for the Nursing Profession, Department of Health for Scotland, 102, George Street, Edinburgh, 2.

Rectorial Address at St. Andrews

Air Vice-Marshal Sir David Munro was installed as Rector of the University of St. Andrews on April 12, and addressed the students on the subject of discipline and freedom. Sir James C. Irvine, Vice-Chancellor, presided, and conferred the degree of LL.D. upon Sir David and also upon several others, including Sir Edward Mellanby, Major-General Sir Leonard Rogers, and Colonel Sir Alexander James Hutchison Russell. The Rector said that without self-discipline freedom might "go to the head," for those who had won freedom sometimes spent the rest of their lives in trying to take it away from others. Intellectual freedom came originally from the European universities in the Middle Ages. Freedom nowadays consisted in the liberty of people to think for themselves, to study and learn in the particular fields of knowledge that interested them, and to act fearlessly on the dictates of their opinions and ideals. Knowledge was a free country, and there was only one kind of freedom. There were, however, two kinds of discipline—discipline from within and external discipline. The latter—for example, in the Army—might do much to develop self-discipline in the soldier. The people who could deal with themselves were those who had really won freedom, not by living in a negative state and refusing to be dominated by their own or other people's ideas but by striking out for themselves and keeping a purpose in life. The gods sold all things at a price, and the price of freedom was service. A university had much in common with military service in its tradition of manners and customs, which helped both to maintain external discipline and to foster discipline from within. Kipling knew the value of games in fostering the spirit both of freedom and discipline, and if he had been alive now he might have welcomed the national physical fitness campaign in a stirring ode. As with the body so with the mind—in order to keep the mind fit it must be exercised, or, in other words, they had got to work. The dilemma between discipline and freedom was age-long with a struggle lest the former should become tyranny and the latter licence. At all costs they must keep their liberties, for once lost they were not easily regained.

ENGLAND AND WALES

Cancer Treatment in North Wales

On April 12 representatives of county councils and voluntary hospitals in North Wales met in conference at Colwyn Bay. This was the sequel to a discussion with Sir John Rowland, chairman of the Welsh Board of Health, on the best means of putting into effect the provisions of the Cancer Act, 1939. The terms of the new Act were explained to the members of the conference, and the first point discussed was whether the county councils of North Wales should take joint action to provide a suitable institution for the treatment of cancer or should act independently. It was suggested by various speakers that the Bangor and Wrexham hospitals might be used as diagnostic clinics, since cancer cases were now for the most part treated at those institutions. The general opinion was that while Bangor and Wrexham might be used for observation and diagnosis, the actual treatment should take place at larger institutions in Liverpool or in Manchester. The outcome of the debate was an invitation to county medical officers, clerks to the county councils in the area, and representatives of the Bangor, Wrexham, and Shrewsbury hospitals to frame proposals for submission to a further conference.

Scarborough Health Congress

The preliminary programme of the Health Congress, which is to be held at Scarborough this year from July 3 to 8, under the presidency of the Earl of Harewood, has been issued by the Royal Sanitary Institute. Among the subjects to be discussed are: reorientation of the public health services; the problem child, the difficult parent, the awkward family; evacuation schemes and the health and sanitary problems arising therefrom; health visitors and midwives in relation to air raid precautions; the Cancer Act and modern methods and treatment of cancer; practical methods in clean milk production; the financial structure of the national health insurance scheme and "Whither National Health Insurance?"; some aspects of sick absence in industry and the need for a broader conception of hygiene in industry; rural hygiene in the Tropics. Already nearly 800 official delegates have been appointed by Government Departments, foreign and Dominion Governments and municipalities, local authorities, etc., in Great Britain. At the Health Exhibition the exhibits will include foods, sanitary appliances, and various appliances illustrating municipal activities and hygiene in the home.

Correspondence

Research in Clinical Medicine

SIR,—One of the difficulties of the problem posed by Sir Ernest Graham-Little (*Journal*, April 15, p. 797) is to be clear what one means by clinical research. The *O.E.D.* defines research as: "An investigation directed to the discovery of some fact by careful study of a subject; a course of critical or scientific inquiry." The first part of the definition will hardly do. We have in the rooms of the Royal Statistical Society the original of a *Punch* cartoon depicting an official of the society counting the number of cross-eyed men who went over London Bridge in a day. Had we indeed carried out such an inquiry it would have conformed to the first part of the definition, and yet I doubt whether Mr. Bishop Harman or Sir John Parsons would have accepted it as being a piece of clinical research. The second part of the definition is more promising. If our imaginary official had not only enumerated the bridge-crossing squinters but had tracked them to their homes, compared their ages, their habits of life, and their occupations with those of non-squinters, we should be getting nearer to a piece of "real" research. In this way, as I think, we do come nearer to the crux. A researcher is a persistently inquisitive person who, partly by nature and partly by training, can follow a trail and has *time* to follow it. The teaching of medical history seems to be that the great clinical researchers have been men who never had large private practices or men who did their best research work before they grew busy. William Charles Wells was an example of the former, Pierre Louis, Richard Bright, and William Jenner of the latter class.

Of course there are no absolute distinctions, but it is, I think, true that great researchers and great practitioners are generally of different psychological types, and, as I see it, one of our difficulties is that the distinction is not recognized in clinical research. In what are called the laboratory sciences the researcher's path is fairly well defined. There are plenty of chemists and physicists in professional practice or industry who are quite as good judges of chemical or physical research as medical practitioners are of clinical research. But they are rarely if ever appointed to professorial chairs. In these sciences it is recognized that both ability *and* long training are needed to fit a man to be the head of an academic department. In medicine and surgery this is not recognized; it may happen that a newly appointed clinical professor has not held before any whole-time junior post in a research department. One reason has been mentioned by Sir Ernest Graham-Little. No candidate would get a hearing from an appointing board who had not had experience in the routine teaching of a British clinical school. Suppose there were a vacancy now in a whole-time clinical chair. Owing to the relapse of Central Europe into barbarism, one could pick some foreigner with a world-wide reputation *as a researcher*. What chance would he have against a man who had served with credit on the visiting staff of an English teaching hospital? The answer is, of course, none whatever, and if the primary function of a "unit" is undergraduate teaching, it is the right answer. But it means that the creation of a great *research* school must be the accident of an accident.

More than eighty years ago Macaulay made the following entry in his diary:

"I had a few words with the Prince about the Regius Professorship of Medicine at Cambridge, now vacant by Haviland's death. I remarked that it was impossible to make either Oxford or Cambridge a great medical school. He said, truly enough, that Oxford and Cambridge are larger towns than Heidelberg, and yet that Heidelberg is eminent as a place of medical education. He added, however, something which explained why this was. There was hardly, he said, a physician in Germany, even at Berlin, even at Vienna, who made 1,000 *l.* a year by his profession. In that case a professorship at Heidelberg may well be worth as much as the best practice in the great cities. Here, where Brodie and Bright make more than 10,000 *l.* a year, and where, if settled at Cambridge or Oxford, they probably could not make 1,500 *l.*, there is no chance that the academic chairs will be filled by the heads of the profession."

As usual, Macaulay put the Philistine's point of view with lucidity. He assumed as a matter of course that the successful practitioner would be the best professor. Have the teaching hospitals abandoned that philosophy?

It may be that the future of clinical *research* in London is in the L.C.C. hospitals. The researcher needs material and he needs pupils, but not a horde of beginners. Serious research in London within the field of the officially infectious diseases passed long ago to the M.A.B., now L.C.C., service. Perhaps this will happen in a wider field. There is no reason why the relation between the Council's hospitals and the University of London should not become closer; indeed the Postgraduate School at Hammersmith created a precedent. In this way provision may be made for research without affecting the characteristic features of the ancient undergraduate schools of London.—I am, etc.,

Loughton, April 15. MAJOR GREENWOOD.

Treatment of Placenta Praevia

SIR,—I am glad to learn that when Dr. Bethel Solomons says (January 21, p. 134) he was "brought up" to plug the vagina for placenta praevia he only means that he was taught to do so under the most exceptional circumstances. This explanation suggests that a child might be said to be "brought up" on champagne because he got a sip out of his father's glass on Christmas Day. How exceptional these obstetrical sips would be may be gathered from the fact that, in the four hospital reports which carry Dr. Solomons's name as assistant to Dr. Tweedy or myself, among thirty-six cases of placenta praevia only one was plugged by the hospital authorities. As Dr. Solomons knows, the quotations from my textbooks refer to the wholly exceptional circumstances to which he himself refers in his second letter. If he had read on a little further in my large book he would have found: "Plugging the vagina is an unnecessary and objectionable procedure in placenta praevia," followed by the reasons for this statement. I entirely sympathize with Dr. Solomons in his attempts to stop vaginal plugging in such cases. Surely, however, he would have made his argument stronger by pointing out that since somewhere about 1889—that is, the beginning of the mastership of Sir William Smyly—every Master has whole-heartedly condemned the practice *except* under certain almost unknown conditions.—I am, etc.,

Christchurch, N.Z., March 25. HENRY JELLETT.

Sacro-iliac Strain

SIR,—The article on sacro-iliac strain by Mr. A. Lawrence Abel (April 1, p. 683) raises several points of interest. While acute cases, due to sudden and severe trauma, do occur and may require manipulation, the class

of case usually met with is of a more chronic type, and very largely an expression of muscular incompetency associated with poor statics of the body as a whole. The technique of manipulation must vary according to the view taken by the operator as to the direction of any supposed subluxation. Sometimes it may be performed without an anaesthetic. On the other hand, Haldeman and Soto-Hall (*J. Bone Jt. Surg.*, July, 1938) point out the value of the use of procaine hydrochloride in the treatment of disturbances of joints due to sprain, and have applied it with success to the sacro-iliac joint.

It would appear that the local injection of procaine in cases presenting the clinical picture of sacro-iliac derangement causes the immediate transient disappearance of signs and symptoms in most of the cases, and, in a fairly large proportion of cases, the relief obtained is more lasting. When combined with manipulation, thus made painless and easy, lasting benefit can usually be obtained. This is presumably due to the breaking down of a vicious circle of defensive muscle spasm productive of secondary postural abnormalities which are in themselves factors tending to aggravate the strain. A long spinal puncture needle is entered through the skin at a point over the sacrum midway between the two posterior superior spines of the ilia. The needle is then directed towards the desired side at an angle of 45 degrees. About 20 to 30 c.cm. of 1 per cent. procaine are injected. After waiting ten minutes the joint is manipulated. From personal experience of the method I consider that it is of real value. Incidentally it helps to determine whether an alleged disorder of the sacro-iliac joint is responsible for the patient's symptoms.

The alleged injury is often only one link in a long chain of circumstances which lead up to the condition of sacro-iliac strain. There is frequently the special build or bodily type of the patient to be considered, for sacro-iliac strain is usually found in slender subjects. The cases are often middle-aged and debilitated. There is the factor of poor posture and poor muscular tone which makes the subject prone to develop the condition in either the acute or more chronic form, and there is the factor of anatomical variations in the sacro-lumbar region of the spine. As an example of this one would instance the condition of what is termed combined pelvic joint strain produced by a painful semi-sacralization of the fifth lumbar vertebra. Aggravated cases of this condition may require operation or very prolonged fixation in plaster.

The amount of motion in a joint depends, first, upon the shape of the joint surfaces; secondly, upon the laxity or tightness of the ligaments; and, thirdly, upon the condition of the protecting muscles. The joint, the ligaments, and muscles work as a unit. Any joint is in danger of being injured if motion is forced beyond the normal range. Good bodily mechanics implies that all the joints of the body are used in such a position in relation to their total range of motion that there is always present in each joint more motion in either direction. This is the factor of safety motion. If one is dealing with a person who has poor bodily mechanics and incompetent trunk and abdominal muscles—for it is upon the muscles that the pelvic joints rely greatly for their support—the ligaments undergo adaptive changes of structure and function. Ligaments are not simple strap-like structures. They have a vital elasticity which, under conditions of chronic unphysiological stress, may be lost. Such changes in the structure and function of ligaments make them less able to fulfil their function and protect the joint. The joint begins to be used in a faulty position, its normal range of potential motion is lost, and so the factor of safety motion also. With these features present, if for any reason an extreme position of the joint, be it flexion or extension, is suddenly increased in amount, the possibility of overstretching or straining the supporting structures of the joint must be very great. This sudden change in position, in a subject already in a state of physiological deformation, is the most common cause of acute backache and other acute strains. Note that it is very often not the injury so much as the vulnerability of the subject exposed to it which is apt to determine his becoming a victim of injury, which, in fact, is often comparatively slight in these cases. It is the last straw. Without any apparent injury at all, not a few slenderly built subjects with poor tone and posture begin to develop a chronic sacro-iliac strain. The low back becomes gradually fixed in a wrong attitude.

Normally, motion exists in the sacro-iliac joints during pregnancy, parturition, and menstruation. During the latter months of pregnancy there is increased lordosis. This position, together with a physiological relaxation of the ligaments, makes conditions ideal for the production of sacro-iliac strain and even subluxation. Post-operative backache is very largely due to a sacro-iliac strain, which could be prevented by supporting the lumbar spine and supporting the knees in slight flexion. Not a few victims of low backache date the onset of the condition from an operation. There exists a big opportunity for preventive orthopaedics in these fields.

Rightly understood, therefore, I would submit that sacro-iliac strain often is only in small measure a local condition. Usually it is an expression in any event of faulty spinal and general statics. Of necessity, therefore, one should enlist the orthopaedic art to correct the faulty and imperfect use of the spine and of the whole body, and above all to restore the tone and right use of the muscles. The fundamental issues which underlie and form the true background of the so-called strain must be dealt with. I have recently given a complete description (*Lancet*, February 11, p. 352) of how this is to be done. I consider that there is great need for this concept to-day and for knowledge of the practical methods of its application. While admitting that an antero-posterior pelvic brace support is of assistance in cases of sacro-iliac strain, it has to be remembered that an understanding and appreciation of the value of restoring good bodily mechanics will result in a marked preference for a brace which spans the lumbar spine. It causes the thorax to be supported in an upward and forward direction. It is employed as a useful and temporary measure while the muscles are regaining tone, thus assisting in keeping the loins stretched and lifting excessive load off the low back. It is the position of the head which helps to determine right or wrong use of the body and of its component parts, whether it be the spine, shoulders, feet, knees, or sacro-iliac joints.

One final word of warning about manipulation of the back is necessary. Very forcible flexion of the lumbar spine in the anaesthetized subject can on occasion result in absolute disaster by producing a prolapse of one of the intervertebral disks. This is one reason for employing manipulation without an anaesthetic in certain of the selected milder cases and for the more general employment of a local injection into the region of the joint to assist the procedure.—I am, etc.,

Edinburgh, April 7. W. A. COCHRANE.

Tuberculosis and Milk

SIR,—Now that the attention of the whole country has been focused on milk I would like some expert opinion through the columns of your *Journal* on the statement made by the Parliamentary Secretary to the Board of Education (Mr. Kenneth Lindsay) during the course of the debate on the anti-tuberculosis service, Wales and

Monmouthshire, in the House of Commons on March 22. Mr. Lindsay stated with authority: "Where there is neither T.T. nor pasteurized milk obtainable the value of milk is so great that the children will on balance be in more danger of tuberculous infection if they are debarred from taking milk than if they take the risk and drink ungraded milk" (*Parliamentary Debates*, **345,** 1422). May I ask, Does this statement represent the opinions of our medical officers of health and the profession as a whole? Also, Is this taken seriously into consideration by our education authorities in their distribution of milk to school children?—I am, etc.,

Aberdare, April 6. HAMILTON F. MOFFIT.

Brow Presentation in Labour

SIR,—Having found an easy method for dealing with brow presentations in labour, I desire to pass it on to the profession for what it is worth. Perhaps I am all the more excused for doing so when one considers the drastic alternatives that are sometimes resorted to in this condition. The method is so simple that I have hesitated to print it, yet I have not seen it described even in the latest Glasgow textbook.

In an ordinary straightforward brow presentation (fronto-posterior) the patient gets a whiff of chloroform in the left lateral position. One assistant—a midwife—holds the mask over the patient's face with the right hand and supports the patient's right leg with the other. The accoucheur introduces his left hand into the birth canal and gently pushes the head upwards. Placing the right hand externally on the lower abdomen, just above the symphysis pubis—that is, on the foetal head—he presses it backwards—that is, towards the sacrum. By this means he gets any degree of flexion on the head he desires. He then withdraws the left hand from the vagina, but maintains the external pressure on the foetal head. Two fingers of the right hand on the occipital protuberance, which can be easily felt through the lower abdominal wall, keep the head in position till the patient has a pain which fixes the head, when the baby can be born naturally, if so desired, or forceps can be applied when the head comes down lower. Where the presentation is fronto-anterior the head must be first turned into a fronto-posterior position, which is not very difficult, as in one case I had, when the presentation was a true shoulder. In this case I brought the head over the pelvis, discovered it was occipito-posterior, and turned it, when I found it was a brow and flexed it as above. After two pains the left hand was withdrawn, and after a few more I left the nurse in charge and went for lunch. Before I returned the baby had been born naturally.

The principle on which this procedure depends is that the movements of the head on the trunk are flexor and extensor, and if you press on the head from the back it is bound to flex. Actual interference is so trivial that there is little danger to the mother, and almost any probationer could do it.—I am, etc.,

Glasgow, April 8. JOHN S. M. ORD, M.B., Ch.B.

Pruritus and Psychology

SIR,—In the *Journal* of April 8 (p. 748), Professor Millais Culpin has made a comment on Mr. Lawrence Abel's article on pruritus ani. This article and that of Dr. Norman Burgess on chronic urticaria (April 1, p. 662) make me wish to add something to Professor Culpin's remarks.

Neither Mr. Abel nor Dr. Burgess seems to me to recognize the normal excitability of tissues. The one fails to mention anal excitability when describing pruritus ani and the other fails to mention skin excitability when describing chronic urticaria.

Psychology turns out to be highly complex, and few yet recognize the truth of Professor Culpin's words: psychology is not a mental state but a science like physiology. But surely one can ask of the physically minded a proper understanding of the first principle of psycho-physiology—namely, that tissues are excitable.

The problems of unconscious exploitation of sensuality, of anxiety related to the unconscious fantasy that belongs to sensual experience, of absolute and relative inhibition of local excitements, and so on—these are quite excusably left to the psycho-analytical research worker. But no common basis can ever be found if the existence of sensuality is denied, as it is almost universally denied in specialist literature.

The logical outcome of such a tendency would be eventually to deny the sensuality and fantasy of sexual excitement; in fact I have already seen sexuality described (in a non-scientific journal) as a mutual allergy.—I am, etc.,

London, W.1, April 10. D. W. WINNICOTT.

M & B 693 in Pneumococcal Meningitis

SIR,—In view of the widespread interest shown in M & B 693 I think the following case is worth recording as an instance of very rapid and complete recovery from a condition which formerly carried a grave prognosis. The patient, a healthy active boy aged 3 years 9 months, had had only one previous illness—bronchopneumonia at 10 months.

February 19.—The child was absolutely normal during the day, but in the evening he vomited and appeared to be feverish. The mother was not unduly worried, but she put him to bed early and stated that he had quite a good night.

February 20.—When first seen the child had a temperature of 102° F. and a pulse rate of 120. The tonsils were red and enlarged, and showed a few pin-head-sized points of pus. Nothing abnormal was found in the chest or abdomen. A diagnosis of tonsillitis, probably streptococcal, was made and symptomatic treatment started.

February 21.—The patient was much improved, his temperature being 99.6° F. and his pulse rate 94. The tonsils were still enlarged and red, but no pus was seen on them.

February 22.—The pulse and temperature were normal. The patient had had a good night and appeared to have made a complete recovery. On February 23 the child was not visited, but the mother stated that during the day he seemed to "go off," and was not as well as on the previous day. He vomited and became drowsy during the afternoon. He had a very restless night with hardly any sleep.

February 24.—When seen that morning he was lying on his left side, with marked head retraction. He appeared to be fully conscious of what was going on around him but did not speak. About every two minutes he gave a short "crowing" cry. Temperature 104° F., pulse 140. The skin, lips, and tongue were dry. Kernig's sign was positive, and the left plantar reflex was extensor, while the right was flexor. No other abnormal signs in the central nervous system were elicited. There were scattered petechial haemorrhages on the back and buttocks. The tonsils were still enlarged and red, and again had pus on them. He was removed to hospital as a case of meningitis—? meningococcal.

That afternoon lumbar puncture was performed. The cerebrospinal fluid was relatively clear at a pressure of 240 mm. of water, and it contained small numbers of red blood corpuscles and a small amount of pus and Gram-positive diplococci. On culture, a growth of pneumococci, Group I, was obtained. A throat swab taken at the same time showed a few colonies of haemolytic streptococci and a moderate growth of pneumococci. The child was given M & B 693, 0.5 gramme immediately and 0.25 gramme every four hours, and 10 c.cm. of anti-meningococcal serum intrathecally (before the lumbar puncture report was known). At

10.30 p.m. his condition was still serious; his temperature was 104° F. and his pulse rate 120. Lumbar puncture was performed again. The pressure was 240 mm. of water, but the fluid was now thick and turbid.

February 25.—At 6 a.m. the temperature was 100° F. and the pulse rate 120; the general condition was much improved. At 10 a.m. the temperature was normal and the pulse rate 76. The child was sitting up in bed playing and talking normally, and apparently completely recovered.

February 26.—The patient's lips were slightly cyanosed and M & B 693 was stopped. From then onwards convalescence was rapid, and the patient gave rise to no further anxiety.

March 3.—Lumbar puncture was performed again: pressure, 180 mm. of water; small number of leucocytes; 30 per cent. polymorphs; moderate number of red corpuscles; no organisms seen in a Gram-stained film; culture sterile.

March 8.—The child developed a cough and ran a temperature for twenty-four hours. There were no physical signs in the chest, and the condition settled down without any further developments.

March 23.—The child was seen at his home again. He was once more a healthy active boy and showed no after-effects of his illness.

One cannot say what would have been the course of the illness if M & B 693 had not been given, but certainly the dramatic rapidity of the recovery would appear to have been due to this therapy. A further point of note was that in all only 3 grammes of M & B 693 were given, and the temperature and pulse were normal after 1.5 grammes.

I am much indebted to Dr. L. J. Prosser for permission to publish the notes of this patient while in the hospital; and my thanks are also due to Dr. N. Pederson for giving me the details of the treatment and progress during that time.

—I am, etc.,

Knaresborough, April 3. GERALD B. ROBINSON. M.A., M.B., Ch.B.

M & B 693 for Gonorrhoea

SIR,—In a paper on this subject (April 8, p. 711) in which Drs. F. J. T. Bowie, T. E. Anderson, A. Dawson, and J. F. Mackay give convincing evidence of the curative properties of the drug in question, reference is made to a number of points on which as yet there would appear to be no unanimity of opinion. I believe a satisfactory answer to many of the questions raised could soon be found by carrying out a series of small-scale but carefully detailed investigations on the lines of the "randomized-block" arrangements used by Professor R. A. Fisher and his co-workers in agricultural research. For the present purpose this would consist in a specially supervised investigation of thirty-two or forty cases of the disease separated into eight or ten groups, each of four treatments. The patients would all be of the same sex, and, for each group, would be chosen as nearly as possible of the same age, physique, general health, etc. In particular the members of each group should be suffering from approximately the same degree of severity of the disease and should have reached the same stage in the progress of the disease. For separate groups these values would vary within limits depending on the information it was desired to obtain from the investigation.

The above details might be considered exacting, but the relatively small numbers involved make it possible to carry out the necessary selections. It is unlikely that any four members of a group would be found on the same day, but provided they are chosen in such a way that each patient has the same chance of being allotted to any particular course of treatment the order in which he begins that treatment is unimportant. The treatments being investigated may differ qualitatively or quantitatively, but in either case precautions should be taken to ensure that the treatments as laid down are actually carried out. The results of the investigation are determined by carrying out an analysis of the variance of the intervals of time taken to reach one or more stages of progress—for example, the disappearance of gonococci from the discharge, the drying up of the discharge, etc. Significance is tested for by means of Fisher's z-test. (Where the groups contain only two treatments each the t-test may be used to test for significance; a rough approximation to such a condition is shown in Table IV on page 717 of the same number of the *Journal*.) An investigation along the above lines will indicate any significant difference in the average time taken to reach any stage in the process of cure under the various lines of treatment or dosage under examination. Even for any one treatment it is possible that the result may be significant for one particular stage in the process of cure and not for others. It is probable that an investigation of this kind would throw light on the best line of treatment to be adopted in particular cases and show where economies in dosage might be effected without delaying recovery.

While the method of analysis used in this type of investigation is valid for groups chosen from a fairly wide range with respect to the severity or stage of the disease, it is probable that the greatest amount of information would result from investigating anterior and posterior urethritis separately. The figures from the two investigations, after being analysed separately, might be combined in a final analysis, and replicate observations on groups of the same four treatments may be subsequently added and analysed. In the above description the group is taken as corresponding to the block in the agricultural experiment. It is believed that the three or four members of a group could be chosen with sufficient accuracy to ensure that the variation within a group reflects only differences of treatment. The variation between groups is largely eliminated in the subsequent analysis. In agricultural experiments additional accuracy is obtained by carrying out preliminary trials and using a linear regression formula calculated from the preliminary and experimental values to eliminate some of the variation due to differences in the fertility of the soil within blocks. Analogy suggests that such a refinement would have great value in the present investigations in eliminating residual variations within groups due to differences in "soil," but it is not easy to see how the practical difficulty of keeping patients under observation for a preliminary period without treatment and making some record of the relative rates of progress within groups could be overcome.—I am, etc.,

Rustington, Sussex, April 10. A. GARDNER, M.B.

M & B 693 in Phthisis

SIR,—Several months ago I wrote an article (which has not been published) on "the effect of secondary infection upon tuberculous lung disease and its treatment." May I quote the conclusion of that article.

"Since M & B 693 has been found to be so remarkably effective in promoting the destruction by phagocytosis of haemolytic streptococci, pneumococci, and staphylococci, which with other pathogenic organisms may be found in the sputum of sufferers from chronic lung tuberculosis, and since there are strong grounds for the belief that these secondary bacterial infections have a definite effect in activating the spread of tuberculization of the lung with resulting cavity formation, ulceration, and haemoptysis, it would seem that M & B 693 should be the ideal therapeutic agent in the treatment of this disease. Apparently it may be given in ordinary dosage and with reasonable hope of effecting a

permanent cure, even in those steadily advancing cases in which the ultimate outlook may seem to be almost hopeless, since the presence of antibodies to the secondary infectors may assist the effect of the chemical agent. It might also be useful in eliminating the chronic staphylococcal infection which may be such a serious complication after the operative treatment of tuberculous disease of bone."

—I am, etc.,

Worthing, April 7. HERBERT H. BROWN.

Chemotherapy of Pneumonia

SIR,—During the last five months twenty to thirty cases of pneumonia have been treated at this hospital with M & B 693. These children have ranged in age from 5 months to 13 years, and practically all have been cases of bronchopneumonia. In six cases out of twenty the temperature, pulse, and respiration were normal in less than three days after starting treatment. Nine cases took three to four days to reach normal, and four others about six days. In fourteen cases the signs in the chest persisted up to about four days after the temperature, pulse, and respiration had come down, and in four cases for six days. In two cases the patient became very restless about the second day of the treatment, but this soon passed off.

At first we gave about 1.25 grammes, spread over the first and second days for a child of 1 year, and 2.5 grammes for a child of 5 years, increasing the dose according to the age of the child. If the temperature did not come down by the end of the third day we gave the child of 1 year 0.75 gramme per day, and the child of 2 years 1.25 grammes, up to a week if necessary. In three cases the temperature rose again after it had reached normal, but dropped when more M & B 693 was given. One child at first responded to treatment but later developed an empyema and died. This was the only death in the series.

I am indebted to Drs. Barnes and Greenop for permission to report these cases.—I am, etc.,

E. A. NETTELL, L.R.C.P., M.R.C.S.,
Sydenham, April 12. Resident Medical Officer, South-Eastern Hospital for Children.

Intussusception due to Meckel's Diverticulum

SIR,—I read with interest the paper in the *Journal* of March 11 (p. 504) on intussusception due to invagination of Meckel's diverticulum by Professor Milroy Paul. I dealt with a similar case in a boy of 12 a few years ago, in which I also was able to "reduce" the inverted Meckel's diverticulum by gas pressure as one deals with the finger of a rubber glove which is inside out. In my case the diverticulum was about three inches long and tapered slightly to the tip, which was ulcerated internally. The next step in the operation was removal of the diverticulum in such a manner that constriction of the gut was obviated as much as possible.—I am, etc.,

H. A. HILL,
Trimulgherry, Deccan, S. India, April 7. Major R.A.M.C.

Sterilized Air

SIR,—In the *Journal* of February 25 (p. 396), in an annotation on an article by Hart, you refer to the fact that a reduction in mortality and infection resulted from sterilizing the air round the site of operation, and suggest that some more simple method might be evolved. This is already done, if anyone will try it.

It is by no means simple to keep all the air in the theatre sterile; and there must be contamination from masks, etc. Actually the chief requirement is that the air immediately round the site of operation shall be sterile; but it should also be warm and moist. I suppose it should be nearly saturated with water, and at body temperature, but that would make work too difficult if all the air in the theatre was in that condition. It would be simple, however, to have a continuous delivery of warm, moist, sterile air just at the site of operation, yet without impeding the surgeon. This can be done quite easily. The plant should cost about £50, perhaps less, to install; running costs should be about 1d. an hour. This would deliver the air, sterile, warm, and moist to any degree, to the site, and also take it away again—most of it, anyhow. I have been working on aeration methods, and have two such plants available for trial. I did not go further with them, as it seemed hopeless to do so unless one were tried. There are several points which require working out, such as the volume of air, the rate of flow, and the least inconvenient method of taking away waste air. Until the apparatus has been tried and the details worked out one cannot say much—except that it certainly would not make things any worse or impede the surgeon. If anyone wishes to try one of these plants I should be glad to supply one. Some amount of modification would be required to determine the optimum conditions.

The same plant, but more simple and therefore costing less, should be useful in preventing cross-infection in fever wards. There is frequent reference to this, as, for instance, in the same issue of the *Journal* (p. 350): "The logical outcome of their work was the nursing of all scarlet fever cases in separate units." That should be unnecessary if this plant were used; in fact, it ought to be feasible to crowd beds, even. The cost of the plant for this would be about £30, to supply ten to twenty beds; the running cost being about 1s. a day for all the beds. I intended to determine the rate of flow and volume of air necessary, but it is too difficult to imitate actual conditions; also it is not worth while unless someone will try the apparatus in an actual ward. The device for this purpose was a light conical hood with thin curtains (gauze) hanging down, suspended over the bed, but raised high enough to allow the child to sit up and play, which also would be sufficient for nursing. From the apex a duct runs to a filter and thence to a suction fan. This would cause a gentle current of air, from below and round the bed, into the apex of the cone; and so all droplets, dust, etc., would be carried away and filtered off. Some trials would be necessary to determine the optimum conditions, and a few other things.

If anyone cares to go into the matter I should be pleased to supply everything necessary and to do such work as is required. I may say that there is nothing "patent" about the apparatus, and I have no interest financially. For the trials I should employ certain units which have been used for experiment.—I am, etc.,

Kingston Hill, Surrey, April 8. W. F. COOPER.

Shock Therapy

SIR,—Without wishing to prolong the recent correspondence between Dr. Ian Skottowe and Dr. Horace Hill on shock therapy in schizophrenia, I have been unable to trace, after an extensive search, any publication by Dr. Hill of his results, which, as stated in his letter (*Journal*, January 7, p. 40), have, during the last four years, "compared very favourably with those of any convulsive method."

In the only publication I have so far come across which mentions this method, and its results in eighteen cases of schizophrenia—namely, the record of a paper read last summer by Dr. Hill at a divisional medical meeting—he stated then that "owing to the short time (about two and a half years) the work has been done and the brief experience the subject is naturally a tentative one at present."

As it is so short an interval between the publication of this paper, which concluded with Dr. Hill's remark, "I am groping about in the dark, with something that might

lead us in some useful direction," and his letter (*Journal*, April 15, p. 798) reporting that he has sent full details of the method and treatment "(only by request, of course) to such responsible bodies as the Government medical departments and hospitals, State hospitals, medical schools, and clinics in Australia, South Africa, India, America, Ireland, and a number of centres in England," I feel sure I must inadvertently have overlooked some important publication by Dr. Hill, and I have no doubt he will kindly come to my help.—I am, etc.,

Salisbury, April 15. E. S. CALEY.

Double Function of Ocular Muscles

SIR,—With reference to Dr. H. Elliman's letter in the *Journal* of April 15 (p. 795), the double function of the ocular muscles was demonstrated at the last meeting of the Physiological Society, and no one disputed my explanation. That pressure of the ocular muscles produced an effect upon the retina was known to Purkinje, who showed that vision was momentarily interfered with at the point corresponding to the insertion of the eye muscle. Pressure on the eye with the finger is a totally different thing. Further experiments bearing on the point will be found in my book *The Physiology of Vision*. I consider my theory of vision conclusively proved, and no longer a theory but a fact.—I am, etc.,

London, N.W.2. F. W. EDRIDGE-GREEN.

Plaster Bandages

SIR,—I note in the *Journal* of April 8 (p. 727) a photograph and letter from Mr. Charles E. Kindersley recommending Böhler's wooden box "to simplify the making of plaster bandages" and to ensure constancy of weight. I feel it right, therefore, to warn your readers that in my experience the box by no means ensures either simplicity or uniformity. In fact, those who are used to good bandages and saw the apparatus at Böhler's clinic must have been shocked at the roughness of the products and surprised that they satisfied such a skilled surgeon. Actually the simplest method of producing uniform bandages, as will be confirmed by practitioners who try it, is to have the plaster spread gently over the book-muslin bandage with a light trowel. In this method the worker's hand is only used for rolling, not for rubbing in, so that the risk of moistening the plaster by sweat or other form of damp is reduced. Plaster-of-Paris is so delicate that its setting is easily disturbed by much handling. In the U.S.A. many surgeons eliminate all contact with the hand by using a modification of the ordinary bandage roller—a very rapid method. Unfortunately it is difficult to adjust the roller so as to ensure exactly correct tightness of the bandage and density of the plaster.—I am, etc.,

Bath, April 9. M. FORRESTER-BROWN.

Sterilization of Syringes

SIR,—In reference to your valuable leading article dealing among other things with the sterilization of hypodermic syringes (*Journal*, April 8, p. 731), may I cite the method in use at the Charterhouse Rheumatism Clinic. Here anything up to fifty consecutive injections are given with the same syringe. Over a period of ten years, during which more than one hundred thousand injections have been administered, there has been no single case of sepsis.

We have always used the heated olive oil technique first published by Almroth Wright. The syringe (minus the needle) is filled two or three times with oil at approximately 140° C. The needle is then fixed to the syringe and some of the same oil sucked in through it. No further sterilization is carried out during the session, but between each injection either the needle is wrapped in a plug of cotton-wool soaked in methylated spirit, or the whole syringe is suspended in a test-tube containing sufficient spirit to submerge the needle. The caps of the vaccine bottles are swabbed over with spirit. No attempt is made to sterilize the skin. Our experience shows that this is entirely unnecessary.—I am, etc.,

London, W.1, April 14. H. WARREN CROWE.

International Red Cross Work in China

SIR,—The two Hankow hospitals of British foundation (the Union and the Methodist General), although both obliged at one point to move, have never ceased work through these critical months and are now both back in their original premises, working to capacity. Through the International Red Cross these two hospitals have received money grants, drugs, and appliances, without which help they would have been obliged, many months ago, to close down, leaving the enormous refugee area with no available hospital service whatever. The International Red Cross has paid a subsidy of 5d. per day per bed for in-patients and 1d. per visit for out-patients. The most rigid economy is practised, and only patients who are really refugees in acute distress are supported by these payments. At the time of writing the local situation is somewhat better, a little business is starting, and a slowly growing proportion of our patients are now paying their own fees. As some of the funds of the International Red Cross, and much of its medicines and instruments, were contributed through the Lord Mayor's Fund, we wish to offer our sincere thanks to our professional brothers who have helped, by their generous support of the Lord Mayor's appeal, to make it possible for the institutions we represent to continue to serve the poor and destitute during this time of tragedy.—We are, etc.,

EDWARD CUNDALL.
RALPH BOLTON.

Methodist General Hospital,
Hankow, March 16.

Reaction to Whiff of Phosgene

We have received for publication the following statement from the Home Office:

The case reported by Dr. Mary Radford in the correspondence columns of the *British Medical Journal* of April 15 (p. 793) is extremely interesting, but it is equally questionable whether the symptoms described can be considered as due to phosgene poisoning rather than to functional causes.

From details given by Dr. Radford it would appear that the student exhibited signs of irritation in the upper respiratory passages only, and that there was little or no affection of the lungs. Phosgene causes but slight sensory irritation and coughing, and compared with chlorine has relatively little effect on the bronchial tubes. Its inflammatory action is curiously restricted to the alveolar walls of the lungs, and there is some delay before even that action is established, but the pulmonary oedema produced by it is most intense. Chlorine, on the other hand, produces immediate sensory reaction of the upper respiratory passages, as shown by violent coughing, spasmodic choking, and gasping, and the irritant action on the lungs is exercised almost as rapidly.

Pulmonary oedema is pathognomonic of both chlorine and phosgene poisoning, but according to Dr. Mary Radford did not occur in the case reported by her. It is

to be stated, however, that within the past month two cases have been reported to the A.R.P. Department of the Home Office which leave no doubt that the students concerned exhibited signs of mild phosgene poisoning with signs of pulmonary oedema. In one case the over-zealous student presumably intentionally placed his nose over the tube when it was broken by the instructor, and inhaled practically the whole contents of the tube. In the other the student happened to be very near the instructor and inhaled a great deal of the contents of the phial. It is obviously advisable, therefore, that instructors should ensure that students are not in immediate proximity when the phial is broken, and the possibility of individual idiosyncrasy must always be borne in mind.

April 17.

Obituary

G. WYNDHAM CROWE, M.D.

Consulting Physician, Worcester Royal Infirmary

By the death of Dr. George Wyndham Crowe on April 8, at the age of 92, after a short illness, Worcester and District has lost a much-esteemed colleague. He was born on January 16, 1847, at Ennis, County Clare, and was educated at Ennis College. He was the youngest of ten children, five of whom lived to over 90 years of age. His father died at an early age, but his mother lived to the age of 94. He entered Trinity College, Dublin, in 1865, graduated B.A. in 1867, M.B. in 1873, and took his M.D. in 1876. He was also L.R.C.S.I., L.S.A., and L.M. Rotunda Hospital, and was an exhibitioner of Trinity.

Dr. Crowe came to England in the early seventies, and was house-surgeon at the West Hartlepool Hospital, York Hospital, and at the Warneford Hospital, Leamington Spa. In 1876 he joined Dr. Everitt in general practice at Worcester and spent the rest of his life in that city. In 1879 he married Marian, daughter of Mr. W. S. Price Hughes, County Coroner, of Northwick Hall, Worcester. There were eight children of the marriage, two dying in infancy, the other six surviving him. In 1881 Dr. Crowe was appointed assistant physician to the Worcester General Infirmary and in 1883 honorary physician, and he held that office until 1919, when he was appointed consulting physician and life governor. In 1886 he went to live at the house which had been occupied by Sir Charles Hastings at the time when the British Medical Association was founded, and he lived there for about forty years.

Dr. Crowe joined the B.M.A. in 1873 and was a member for forty years. In 1882 he was General Secretary of the Jubilee Meeting held at Worcester. He was a member of Council from 1886 to 1905. He was the first honorary secretary of the Worcestershire and Herefordshire Branch and held the office from 1886 until 1906, and from 1903 to 1905 also acted as honorary secretary of the Worcester Division. He was president of the Branch and chairman of the Division in 1910. He had the honour of being presented to King George V on the occasion of the opening of the new B.M.A. House in 1925. At the Centenary Meeting in 1932 he was elected a Vice-President of the Association in recognition of his long services to the B.M.A., an honour which he very much appreciated and of which he was very proud.

Among other appointments Dr. Crowe was for many years medical officer of the Worcester Dispensary and Providence Medical Institution, and in recognition of his services to the poor he was subsequently elected one of the consulting physicians. He was for nearly fifty years surgeon to the Worcester City Police, and also medical officer to the Worcester Post Office and certifying factory surgeon for Worcester District. Up to the time of his death he was medical officer to the Aged Pensioners at St. Oswald's Hospital, Worcester. During the war he was civil surgeon in charge of troops in Worcester, and took on the responsibilities of his son, Dr. Neville Crowe, during his absence on war service over-seas. He was honorary secretary of the Union Club, Worcester, for fifty years, and on his retirement was presented with a handsome silver tea service and tray. He was a very keen fisherman and a good bridge player right up to the end of his life, and in earlier years had been a good shot.

At his funeral there was proof of the affection and esteem in which he was held by his colleagues, friends, and old patients. After cremation his ashes were buried in the grave of his wife, who had predeceased him in 1924. He is survived by two daughters and four sons, one of whom, Dr. Neville Crowe, has been associated with him in medical practice during the last thirty years. George Wyndham Crowe will long be remembered with gratitude for his professional and public services, and for his wisdom and kindness and common sense.

J. W. EDINGTON, M.D., D.P.H.

Professor of Bacteriology, University of Sheffield

We regret to announce the death on April 8, at the age of 50, of Professor James William Edington, following a motor accident in which his wife Bertha also lost her life and his younger son was badly injured.

Edington was born in Dowlaw, Berwickshire, and studied medicine at the University of Edinburgh, where, after a distinguished career as a student, he graduated M.B., Ch.B., with honours, in 1913, and gained his M.D., with honours, in 1920. Soon after qualification he served in the war as captain in the R.A.M.C., being awarded the Croix de Guerre for services in Salonika. From there he was invalided home and became attached to the Canterbury District Laboratory, and later took charge of the Shorncliffe District Laboratory. In 1919, after demobilization, he went to Bradford as an assistant bacteriologist, and from there he came to Sheffield in 1921 to take charge of the University Public Health Laboratory under the direction of the late Professor J. S. C. Douglas. In the course of a few years this service grew to very large proportions, and Edington worked unceasingly in organizing his department so that it could deal with the ever-increasing volume of work coming from the Sheffield City hospitals and from the hospitals of the surrounding districts. In 1931 a chair of bacteriology was created in the University of Sheffield, and Edington was the natural choice for this appointment; he was also appointed honorary bacteriologist to the Royal Infirmary, Royal Hospital, the Jessop Hospital for Women, and the Children's Hospital.

Responsibilities weighed lightly on his shoulders and he was always happy in his work. As a teacher his relation to his students was one of great friendliness and help; despite lameness, he entered into many student activities and was a keen follower of the fortunes of the Rugby football and fencing clubs. In his laboratory he set a very high standard, and it was a great pleasure and an education in itself to be associated with him. His enthusiasm for his job was reflected in his research work,

of which much was related to problems of public health. An accident in his youth aggravated by his war service had resulted in an ankylosed ankle-joint due to tuberculous infection. Even this disability Edington turned to profit, for during a period spent at a sanatorium in Switzerland in 1925 he studied in himself the effects of sunlight upon cutaneous and subcutaneous temperature variations; indeed, the study of tuberculosis was his main interest, and apart from many publications on this subject he had been engaged for more than ten years in the synthesis of a very large series of chemotherapeutic agents, some of which gave very encouraging results. But he was not satisfied with anything but the best, and therefore being cut off so prematurely no written account of this work remains.

Not the least of Edington's qualities was his capacity for friendship. In his laboratories, as elsewhere, he had a friendly word for everyone and radiated great charm of manner. His genius for understanding his friends' difficulties made him generous in his help, and nothing gave him greater pleasure than the realization that he had been able to help others. His untimely death is a great loss to his profession, and our deepest sympathy is extended to his two sons in their tragic loss.

C. G. P.

W. HOWEL EVANS, M.D.

Clinical Pathologist, Liverpool Royal Infirmary

The death of Dr. William Howel Evans at the age of 47 came as a great shock to his numerous friends and admirers. As honorary clinical pathologist to the Royal Infirmary and honorary lecturer in clinical pathology in the University of Liverpool he had ample scope for his activities. Service to others was the keynote of his character. Day and night he worked for the profession regardless of his own health and strength, to such a degree that he delayed for many days his entrance to the nursing home in order that he might stabilize the diet of a diabetic friend of his schooldays. Against ill-health he had long fought cheerfully and courageously. Increasing deafness, later with vertigo, robbed him of his heart's desire—to be a physician—and confined him to the laboratory. Here he was at home, for early in his career, while studying for the B.Sc., he had worked with Professor Benjamin Moore, and came very near discovering the modern vitamin. Fed on polished rice pigeons developed polyneuritis; given an extract from the husk these birds recovered; while he was troubled with the purification of this substance Funk gained precedence. He was a surgeon probationer attached to H.M.S. *Cornflower* during the great war.

When he was a student blood platelets were regarded as little more than "blood dust"; later Howel Evans was quick to appreciate the changing view, so he began endless counts of these elusive structures, stimulated by Professor Ernest Glynn, in whose laboratory pulmonary embolism was regarded as thrombosis and everyone willing to research on this tragic subject was welcomed. His comprehensive study of the platelets in splenic anaemia after splenectomy, and in relation to thrombosis, was presented by him as a thesis for the degree of M.D., and subsequently published. Later he contributed on this subject a chapter in Maingot's *Postgraduate Surgery*. His vast knowledge of the blood and its diseases made him freely sought by physician, surgeon, and general practitioner alike, and his firm and often very decided opinion was accepted. The success of the Blood Transfusion Service of Merseyside was largely due to his own organization and reliable grouping. In 1926 he acted as secretary to the Status Lymphaticus Investigation Committee. To the prostatic and diabetic he gave such personal attention that the light in his laboratory was to be seen far too often in the early hours of the morning. Despite his neglect of holidays he had played his part in sport: a county hockey player, member of the Lancashire team on southern tour in 1922, a rugger player and keen follower of cricket—indeed he was missing from his laboratory to watch with his son every stroke in the last exciting test match against Australia. A collector of antiques, full of lore on the art of making and faking furniture, a philatelist of high order, a collector of books, a voluminous reader, fond of poetry, in the end he turned to Rupert Brooke—the bookmark tells of a soul prepared:

> "Blow out, you bugles, over the rich Dead!
> There's none of these so lonely and poor of old,
> But,.dying, has made us rarer gifts than gold."

And so has passed a fascinating and lovable man, leaving a wife and two children, dearly loved by him.

R. K.

W. H. PARK, M.D.

Dr. William Hallock Park, director emeritus of the Bureau of Laboratories of the New York City Department of Health, died on April 6 aged 76. At the time of his birth in Manhattan, near the university in which in later years he served as professor of bacteriology and preventive medicine, New York City was disease-ridden; epidemics of small-pox were common, diphtheria and cholera infantum carried off children by the thousand each year. He lived to see New York one of the healthiest of cities—a change in which he played a conspicuous part, for it was Park who proved that cholera infantum was due to impure milk and convinced the Board of Health that pasteurization would end that disease, and he was in large part responsible for nearly eradicating diphtheria. He had been associated with research work in the Bureau of Laboratories for more than forty-three years, and in that time his name became familiar wherever medical science has entered the sphere of public health.

After graduating from the College of the City of New York in 1883 Park obtained his degree in medicine in 1886 at the College of Physicians and Surgeons (Columbia University). At Roosevelt Hospital he served as an intern for three years. Returning to New York City after postgraduate study in Vienna he became a specialist in diseases of the ear, nose, and throat. At that time an average of 4,000 children were dying each year from diphtheria, and Park began research in the College of Physicians and Surgeons and made further investigation of the bacteriological diagnosis of diphtheria in the Willard Parker Hospital. At the hospital he came in contact with the late Dr. Hermann Biggs, then a professor in the Medical College of New York University, who later was to be the first director of the Health Department's Bureau of Laboratories. Biggs also was keenly interested in the diphtheria problem, and in 1883 urged the Board of Health to provide for the bacteriological examination of all suspected cases. In May of that year Park was appointed bacteriological diagnostician and inspector of diphtheria, and in 1894 he produced the first diphtheria antitoxin ever made in the U.S.A., and was appointed head of the research division of the laboratory. Convinced that much of the cholera infantum which was carrying off thousands of infants each summer was due to excessive numbers of bacteria in the milk supply, Park demonstrated that the number of these

bacteria could be reduced by sanitary methods and by keeping the milk cool. Impressed by his work, the Board of Health enacted regulations providing for compulsory pasteurization of all milk sold in New York City. From an average of 3,000 such deaths every summer cholera infantum has now become virtually a rare disease. While antitoxin was successful in saving the lives of many children with diphtheria, Park continued to search for a method of protecting children against the disease. In 1913 Behring's announcement of his experiments in active immunization against diphtheria attracted Park, who, with his associates, soon introduced immunization by means of toxin-antitoxin. How successful this attack on diphtheria has been can be seen from New York City's experience. From an average of about 750 deaths each year in the decade before 1929 there were only sixty-three such deaths in 1935. In tuberculosis, pneumonia, typhoid fever, meningitis, psittacosis, and poliomyelitis his research work was equally thorough, and often fruitful.

ROBERT COLLYNS, M.R.C.S.

With the death of Dr. Robert John Collyns of Dulverton a figure of old-fashioned distinction has passed from the life of the West Country. He was a wise physician, a good sportsman, and a steadfast friend.

He was born in 1860, the son of Dr. George Collyns of Moretonhampstead. His grandfather was that Dr. Charles Palk Collyns who wrote the classical work on staghunting, *The Chase of the Wild Red Deer*. Palk Collyns started medical practice in Dulverton in 1814 and was succeeded by his son, Dr. J. B. Collyns, who was joined in 1884 by Dr. Robert, the subject of this note. The fine tradition which he inherited from these medical and sporting forebears remained as the mainspring of his life. At his school, Newton Abbot College, and later at St. Bartholomew's Hospital, which he entered as a student in 1878, he had an academic career of distinction and promise. At the latter school he won the Lawrence Scholarship and gold medal; the Kirkes gold medal, both in medicine; the Brackenbury surgical scholarship, and was also placed first in the Brackenbury medical scholarship, but could not hold it owing to the rule prohibiting the award of these two prizes to the same student. He had been house-physician at St. Bartholomew's Hospital and later at the Royal Dispensary for Diseases of the Chest. With his love of the country and pride in the family tradition of country practice—a pride which he never relinquished—he quietly elected to set aside the opportunity which these achievements opened to him of specialism and its prizes and join his uncle in the Dulverton practice. In 1905 his uncle retired, and died in 1916 at the ripe age of 96. Robert Collyns continued in practice single-handed until he was joined in 1920 by his youngest son, and finally retired in 1927. Some few years before this he had been appointed a Justice of the Peace.

Robert Collyns was fond of hunting in all its forms. For many years he acted as honorary secretary and later as chairman of the Dulverton Hunt Committee. He was an acknowledged judge of horseflesh and a horseman endowed with fine hands and the instinctive sympathy of the true horse lover. His great knowledge of hunting and all its concomitants of country, of weather, of quarry, and of horse and hounds gave him a rich appreciative pleasure of all its phases. As a physician the promise of his early brilliance was fulfilled by the maturing of wide knowledge into the full clinical wisdom of his later years. He brought to the problems of country practice those trained powers of observation and of assessment which under such circumstances no instrumental or laboratory aids can effectively replace. The precision of a clear-cut mind was invariably expressed in clear and precise language, and his opinion was one the rightness of which was not to be lightly challenged. His small spare figure was usually clothed in the fashions of a former day, and his manner was that of an older and richer courtesy. He was proud of his profession and its traditions, and he maintained throughout his days a truly Hippocratic regard for the interest of his patients.

He was a member of the British Medical Association from 1886 until 1934, when he resigned on account of old age, and former president of its West Somerset Branch.

He is survived by his widow and two sons, his second son having died of wounds during the great war.

H. B. W.

E. HANBURY HANKIN, Sc.D.

In the *Times* of April 3 was an announcement of the death of E. H. Hankin, Sc.D. Dr. Hankin's name was one very familiar in India, where he for many years held the position of chemical examiner and bacteriologist to the Government of the N.W. Provinces and Oudh (later the United Provinces) and the Central Provinces. But he was perhaps best known as one of the earliest pioneers in medical research in India and as the founder and director of one of the first bacteriological laboratories to be established in that country.

Ernest Hanbury Hankin was born in Herefordshire and went through a medical training at University College and St. Bartholomew's Hospital, London. He later became a scholar and Fellow of St. John's College, Cambridge, after which he worked for a time in Koch's laboratory at Berlin and the Pasteur Institute, Paris. Bacteriology was then in its infancy, and at the time of Dr. Hankin's appointment bacteriological research in India could scarcely be said to have existed. In fact, the coming to India at this time of two very remarkable men with a curious similarity in name, both steeped in the doctrines and teachings of Koch and Pasteur—Haffkine, the originator of anti-cholera and anti-plague inoculation, whose name has been preserved in that of the present Haffkine Institute at Bombay, and Hankin, the first organizer and director of the bacteriological laboratory at Agra with its investigations of cholera and typhoid in the field—had a very great effect on the subsequent development of medical research in that country. Following upon Hankin's appointment in 1892 was the Lahore Meeting of 1893, which led in due course to the creation of the first Pasteur Institute in India, and in 1906 to the maturing of the scheme, initiated by Colonel Leslie, Sanitary Commissioner with the Government of India, for a regular bacteriological department with central and provincial bacteriological laboratories as at present functioning. In these early beginnings of medical research in India Hankin's various investigations on the isolation of the cholera and typhoid organisms in food and water had a great value. In 1894 Hankin published observations on an outbreak of typhoid at Agra in which efforts were made to isolate the typhoid bacillus from *dahi* (native curds) and well water, this at a time when discussions of disease causation were still much concerned with meteorological conditions and the like. Hankin investigated the question of vibrios isolated by the then new peptone method, and showed that these were not always cholera. In 1895 he published a small book on cholera

with a view to educating the public on this disease, and later a book on similar lines on plague. At Lucknow he was able to show that an outbreak of cholera was due to infected filter tanks, and also carried out some tentative experiments on the use of lime in disinfecting wells. Dr. Hankin in his later years took a great interest in observations on the soaring flight of birds and wrote on this subject, as well as, after his retirement in 1922, on various sociological, national, and other questions.

HENRY ECKLEY HERBERT OAKELEY, M.B., B.Chir.Cantab., died at Durban, Natal, on March 17 from tuberculosis contracted while practising for some twenty years as a radiologist at the Natal coast. After serving in the Boer War he returned to England, where he graduated at Cambridge. Though not in the University boat, he was a distinguished oarsman in his undergraduate days. After leaving the London Hospital he was for a time house-physician and house-surgeon at the Government Hospital, Newport, and on his return to South Africa was senior house-surgeon at the Kimberley Hospital before undertaking practice among the natives of Bechuanaland. During the great war he was attached to the South African Base Hospital in France. Impaired hearing influenced his decision to confine his activities to radiology, in which he excelled. He was wont to apply his knowledge of mechanics to his favourite game of lawn tennis, and was a member of the Berea Tennis Association. He was said to be able to converse on almost any subject as a result of wide reading, and could appreciate what was best in music and liturgy. At his funeral were representative members of the medical profession, including some of his former colleagues on active service. Dr. Oakeley had been a member of the Natal Coastal Branch of the British Medical Association since 1910.—F. C. G.

We regret to announce the death on April 10 in a London nursing home of Dr. JOHN STEWART MACKINTOSH, who had retired to Sandgate, on the Kent coast, after many years of successful practice in Hampstead. Born in 1871, he was educated at Brighton College and in Lausanne, and received his medical training at St. Bartholomew's Hospital and in Vienna. He qualified as M.R.C.S., L.R.C.P. in 1895, and took the M.D.Durham in 1911. He was for three years clinical assistant at the Central London Throat Hospital and assistant medical superintendent of the Paddington Infirmary; then, in 1898, he began general practice in Platt's Lane, N.W., when that part of Hampstead was still surrounded by fields. His practice grew with the district, and when he retired in 1933, on account of progressive ill-health, it was one of the largest in the neighbourhood. Dr. Mackintosh was a man of strong character and wide intellectual interests, his main hobby being anthropology. He was an excellent draughtsman, and prepared the coloured illustrations for the section on diseases of the ear in Allbutt's *System of Medicine*. Elected a member of the British Medical Association in 1909, he served as chairman of the Hampstead Division in 1926–7, and he was also a past-president of the Hampstead Medical Society. Dr. Mackintosh married in 1898 a daughter of Edward Ballard, M.D., F.R.S., medical inspector under the Privy Council and the Local Government Board, who won fame as an epidemiologist and expert in sanitary science under John Simon.

Mr. JOHN ACTON SOUTHERN, consulting surgeon to the Derbyshire Royal Infirmary, died on April 8 at the age of 78 years. He received his medical education at St. Thomas's Hospital Medical School, and obtained the M.R.C.S. diploma in 1883. He was appointed house-surgeon to the Derbyshire Royal Infirmary in 1887 and vacated the post in July, 1889, when he entered private practice as partner to the late Dr. W. G. Curgenven. He joined the honorary staff of the Derbyshire Royal Infirmary as assistant surgeon in 1900, and later became honorary surgeon, from which post he retired in 1919. A large and successful private practice never prevented him from carrying out his hospital duties with strict regularity, and he was an eminently sound and successful operator. During the war years of 1914 to 1918 his duties were exceptionally arduous, with younger colleagues away and with the care of wounded soldiers. For this he received a well-merited recognition in the Order of the British Empire. At this time he also inaugurated the venereal diseases department, in which he continued to work until his health failed last year. He retired from active private practice in 1935, after a long and successful career in and around Derby. Mr. Southern was surgeon to the Derbyshire County Police for twenty-five years. His reputation stood high both with the lay public and with his medical colleagues. An active life and a good constitution enabled him to practise medicine for the long period of fifty-five years.

We regret to record the death at the age of 47 of Dr. ROBERT PERCIVAL LANGFORD-JONES of Whetstone after a long illness. The only son of the late Dr. Langford-Jones, J.P., of Bangor, North Wales, he was educated at Friars School, Bangor, and University College Hospital, London. He took the English conjoint diplomas in 1916 and the London M.B., B.S. degrees in 1920, after serving as house-physician at University College Hospital and temporary surgeon R.N. During the war he saw much service afloat and at the Royal Naval Hospital, Chatham. Dr. Langford-Jones began practice at Finchley in 1921, and soon afterwards became a member of the honorary medical staff of the Finchley Memorial Hospital, where he gave valuable service. He was also surgeon to the S Division of the Metropolitan Police, and a member of the Council of the Medical Defence Union. He joined the British Medical Association in 1920, was representative of the Finchley Division at the Annual Representative Meetings in Nottingham (1926) and in London (1930), and was elected chairman of the Division in 1931. His untimely death is deplored by patients and colleagues over a wide area. The parish church of St. Andrew, Totteridge, was filled for the funeral service, when thanksgiving "for the life of Robert Langford-Jones, for his medical skill, and for his devotion to duty" was offered by the vicar.

Dr. OSCAR MILNER BOOTH-MILNER, formerly medical officer of health under the Cleethorpes and Thurnscoe Urban District Council, died in retirement at his home at Thorner, near Leeds, on March 28. Born in 1862, he was educated at Bramham College and the Leeds Medical School, and obtained the M.R.C.S.Eng. in 1886 and the L.R.C.P.Lond. in 1889, after which he was resident obstetric officer at the General Infirmary at Leeds. He then settled in general practice at Grimsby and Cleethorpes. In 1919 he retired from professional work and went to live at his birthplace, Thorner, where he took an interest in all local activities, becoming chairman of the Conservative Association and president of the cricket club. Dr. Booth-Milner had been a member of the British Medical Association for the past forty-five years. He leaves a widow.

CHARLES NICHOLAS FOLEY, L.R.C.P., M.R.C.S., L.S.A., aged 76 years, died at his home in Ladbroke Gardens, London, W., on March 21 after a short illness. Dr. Foley received his professional training at St. Thomas's Hospital, qualifying in 1889. He then spent two years in India, and later went to the Falkland Islands, where he held a Government appointment for many years, returning to London in 1914. After the war he took a practice in Bayswater, which he had very successfully built up when this last sudden illness cut short his work. He was most generous and kind, not only to the poor but to others who

came to him for assistance. In 1912 he wrote a book on epidemic jaundice and influenza, in which subject he was most interested. He leaves a widow.

Dr. ROBERT CASEMENT KIRKBY died on April 9 at his home in Walberton, near Arundel, Sussex, aged 70. A native of Merionethshire, he studied medicine in London at Guy's Hospital and obtained the English conjoint qualifications in 1894; he was then in turn resident obstetrical assistant and clinical assistant at Guy's, and for some years resident medical officer at the Eastern Counties Asylum for Idiots and Imbeciles at Colchester (now known as the Royal Eastern Counties Institution for the Mentally Defective). Dr. Kirkby had been a member of the British Medical Association for forty-four years.

Dr. JAMES WILLIAM HUTTON, who died on April 3, had been in practice in Burley Road, Leeds, for nearly fifty years. A native of that city, he studied for the profession at the Yorkshire College and the Leeds Medical School, and qualified as M.R.C.S., L.R.C.P. in 1892. After a period as house-surgeon at the Hospital for Women he began general practice. For some years he held the appointment of police surgeon in the city of Leeds, and during the war served with the temporary rank of captain R.A.M.C. Dr. Hutton was a prominent Freemason and keenly interested in sport; he was a founder of the Headingley Golf Club and a supporter of the Leeds Rugby League Football Club and other athletic organizations. The funeral service took place at Burley Parish Church, of which he had been warden several times. He leaves a widow, two sons (one of whom practises medicine at Leeds), and a daughter.

Dr. WILLIAM ERNEST HILLS, who died on March 24, had practised in Church Row, Hampstead, for many years past. He was born at Dover in 1872, son of Edward Hills, J.P., and from Dover College went to Guy's Hospital, qualifying M.R.C.S., L.R.C.P. in 1896. For some years he held resident hospital posts, including those of house-physician and obstetrical resident at Guy's, and surgical officer at the Kasr-el-Aini, Cairo. Returning to London in 1905, he began general practice at Hampstead and became anaesthetist to the London Temperance Hospital, the Hampstead General Hospital, the Prince of Wales's Hospital, and the King George Hospital at Ilford. From 1915 to 1919 he served with the rank of captain, R.A.M.C., mainly in France. Dr. Hills had been a member of the British Medical Association for over thirty years, and served for a long period on the Post Office Medical Officers Subcommittee, making good use of his practical experience as M.O. to the Hampstead Division of the Metropolitan Postal Service. He was also a past-president of the Hampstead Medical Society.

Dr. THOMAS MCCALL ANDERSON, physician to the Actors Fund and to the St. George Society of New York, died of a heart attack on March 24, aged 57. Son of a physician, the late Sir Thomas McCall Anderson, M.D., regius professor of medicine in the University of Glasgow, he was born in Scotland, and in 1908 went to the United States of America, in the same year graduating from the University of Maryland Medical School.

The following well-known foreign medical men have recently died: Dr. CONRAD RIEGER, emeritus professor of psychiatry at Würzburg, aged 84; Dr. RUDOLF KRAUSE, emeritus extraordinary professor of anatomy at Berlin, aged 73; Dr. WILLEM NOLEN, formerly professor of internal medicine at Leyden, an authority on tuberculosis, aged 84; Professor GUIDO GIGLIOLI, M.R.C.P.Lond., lecturer on industrial diseases at Florence, aged 64; Dr. ADRIEN LOPPENS of Brussels, an authority on industrial accidents, aged 54; Dr. GUSTAVE LEVEN of Paris, secretary of the Société de Thérapeutique, Officer of the Legion of Honour; Dr. MAX VON NIESSEN, the bacteriologist and epidemiologist of Dresden; and Professor GEROTA, the Bucarest surgeon.

Universities and Colleges

UNIVERSITY OF LONDON

Recognition of Teachers

The following have been recognized as teachers of the University in the subjects indicated in parentheses:

University College: Dr. J. H. Gray (Anatomy). *St. Bartholomew's Hospital Medical College:* Dr. E. F. Scowen (Medicine); Dr. E. B. Strauss (Mental Diseases, Psychiatry). *Royal Dental Hospital of London School of Dental Surgery:* Dr. R. G. Kam (Anaesthetics). *Maudsley Hospital:* Dr. Eleanor M. Creak (Mental Diseases, Child Psychiatry).

Sir StClair Thomson has been appointed to represent the University at the six hundredth anniversary celebrations of the University of Grenoble, to be held from May 13 to 15, and to present an address of congratulation on behalf of the University.

Presentation Day

The ceremony of presentation for degrees will take place at the Royal Albert Hall on Wednesday, May 10, at 2.30 p.m., and at 6 p.m. the same day the annual service for members of the University will be held at St. Paul's Cathedral, when the preacher will be the Rev. F. L. Cross, Priest Librarian of Pusey House, Oxford. Applicants for tickets should enclose a stamped addressed envelope, and state their sex, and whether they are teachers in the University, graduates (giving degrees), or undergraduates.

Lectures

Two lectures on "The Present Status of Our Views on Human Evolution" and "The Racial Fallacies and Realities of European Peoples" will be delivered by Dr. A. Hrdlicka, curator of the Division of Physical Anthropology at the National Museum, Washington, at University College on Wednesday and Friday, April 26 and 28, at 5 p.m.

Professor E. J. Bigwood, professor of biochemistry in the University of Brussels, will deliver a lecture on "Chemical Reactions between Proteins and Electrolytes" at University College, Gower Street, W.C., on Tuesday, May 2, at 5 p.m.

WESTMINSTER HOSPITAL MEDICAL SCHOOL

Entrance scholarships in anatomy and physiology have been awarded to H. E. Lockhart-Mummery of Trinity College, Cambridge, and R. G. Mathers of Downing College, Cambridge.

UNIVERSITY OF ABERDEEN

Among those who received the honorary degree of LL.D. at the spring graduation of the University of Aberdeen on March 29, when Lord Meston, Chancellor of the University, presided, was Dr. James M'Intosh, Director of the Bland-Sutton Institute of Pathology, Middlesex Hospital.

UNIVERSITY OF ST. ANDREWS

The new Rector of St. Andrews, Air Vice-Marshal Sir David Munro, K.C.B., M.B., F.R.C.S.Ed., Secretary of the Industrial Health Research Board of the Medical Research Council, arrived on April 11 at the University for his installation on April 12, when he delivered his inaugural address in the Younger Hall. Before studying medicine at Edinburgh Sir David was a student of St. Andrews University and graduated M.A. He entered the Indian Medical Service in 1901, was transferred to the Royal Air Force in 1919, and was Director of Medical Services, R.A.F., 1921–30.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a quarterly meeting of the Council, held on April 13, with the President, Mr. Hugh Lett, in the chair, Sir Arthur MacNalty and Mr. Harold Muir Evans were elected Fellows under the Charter, which permits the Council to elect annually to the Fellowship, without examination, two members of the College of twenty years' standing.

Mr. Edgar Samuel John King, F.R.C.S., was awarded the Jacksonian Prize for the year 1938 for his dissertation on "Surgery of the Heart." This is the third occasion on which the prize has been awarded to Mr. King. Mr. Laurence O'Shaughnessy, F.R.C.S., was awarded a certificate of honourable mention for his essay on the same subject. The subject for the Jacksonian Prize for 1940 will be "The Surgical Treatment of Pain."

Mr. Hubert Anthony Buck of Guy's Hospital was appointed Begley Student for the ensuing three years on the result of the examination in anatomy for the M.R.C.S.

The President was appointed, *ex officio*, a member of the Governing Body of the British Postgraduate Medical School for one year from July 10, 1939.

The Council accepted very gratefully a gift of £400 from Mrs. Graham Rees-Mogg for improvements in the Library.

It was decided that a Primary Examination for the Fellowship should be held in India and Egypt in 1940.

The following hospitals were recognized under paragraphs 21 and 23 of the regulations for the Fellowship: Royal Devon and Exeter Hospital, Exeter (resident surgical officer, additional post); Royal Victoria Hospital, Folkestone (senior house-surgeon); the County Hospital, Kingston (junior surgical officer).

Diplomas

A diploma of Fellowship was granted to Stanley Aubrey Jenkins of Cardiff.

Diplomas in Anaesthetics were granted, jointly with the Royal College of Physicians of London, to C. G. Bryan, G. Kaye, and H. R. Youngman.

Diplomas in Child Health were granted to the twenty-six candidates whose names were published in a report of the meeting of the Royal College of Physicians of London in the *Journal* of April 15 (p. 805).

The Services

COLONEL COMMANDANT, R.A.M.C.

Major-General R. S. Hannay, C.B., C.M.G., D.S.O., retired pay, has been appointed Colonel Commandant, Royal Army Medical Corps, vice Major-General D. J. Collins, C.B., C.M.G., retired pay, deceased.

VOLUNTEER OFFICERS' DECORATION

The King has awarded the Volunteer Officers' Decoration to Surgeon Commander St. G. B. Delisle Gray, R.N.V.R.

DEATHS IN THE SERVICES

Major-General DENNIS JOSEPH COLLINS, C.B., C.M.G., late R.A.M.C., died at Millwood, Sutton, Surrey, on April 1, aged 69, from injuries received by being knocked down by a motor car. He was born at Cork on June 8, 1869, was educated at Queen's College, Cork, and at the London Hospital, and graduated M.B., B.Ch. and B.A.O. of the Royal University, Ireland, in 1891. Subsequently he obtained the D.P.H. of his University in 1904, and received the M.D. from Belfast University in 1910. Entering the Royal Army Medical Corps as surgeon lieutenant on July 29, 1893, he became captain in 1896, major in 1905, lieutenant-colonel in the long war promotion list of March, 1915, brevet colonel on June 3, 1916, colonel on December 26, 1917, and major-general on September 15, 1922, retiring on September 15, 1926. While serving in India from 1896 to 1903 he twice received the thanks of the Government of India for his services in dealing with plague. From 1905 to 1910 he served in South Africa. During the war of 1914–18 he served in Mesopotamia, was thrice mentioned in dispatches in the *London Gazette* of April 5, May 10, and October 19, 1916, and received a brevet colonelcy. As a major-general he held the post of deputy director of medical services of the Southern Command in India. After retirement he was appointed director of the County of London Branch of the British Red Cross Society. He received the C.M.G. in 1918, and the C.B. in 1924, and also the Order of the White Eagle of Serbia with Swords. On September 6, 1923, he was appointed Honorary Surgeon to the King, and on June 25, 1935, a colonel commandant of the R.A.M.C. He leaves an only daughter.

Lieutenant-Colonel PATRICK FENELON O'CONNOR, C.B., Bengal Medical Service (ret.), died at Monte Carlo on March 15, aged 88. He was born on March 17, 1850, the son of the late Patrick O'Connor of Killiskillen, and was educated at Belvedere and Carlow Colleges, and at the Catholic University, Dublin. He graduated M.D., M.Ch. of the Royal University of Ireland in 1874. He entered the Indian Medical Service as surgeon on March 30, 1875, became lieutenant-colonel after twenty years' service, and retired on July 30, 1905. He spent his service in military employ, chiefly in the 6th Bengal Cavalry, and had a long record of war service: Afghanistan, 1878–80, Battle of Ahmad Khel, action of Urzu and Patkav Shana, mentioned in dispatches, G.G.O. No. 493 of 1880, medal with clasp; Egypt, 1882, action of Tel-el-Kebir, medal with clasp, and the Khedive's bronze star; Burma, 1886–7, operations of 2nd Brigade, Wuntho Expedition, mentioned in dispatches G.G.O. No. 434 of 1887, medal with two clasps; Chitral, 1895, relief of Chitral, action of Malakand Pass, mentioned in dispatches, G.G.O. No. 998 of 1895, medal with clasp; North-West Frontier of India, 1897–8, as principal medical officer of Malakand Field Force, operations in Bajaur and in Momand Country, Utman Khel, Buner, action of Tanga Pass, mentioned in dispatches, G.G.O. No. 178 of 1898, clasp; China, 1900, mentioned in dispatches in *London Gazette* of November 21, 1902, medal, and C.B. on June 27, 1902.

Medical News

The Marchioness of Aberdeen and Temair, who died on April 18, aged 82, was elected an Honorary Member of the British Medical Association in 1909 on the occasion of the Annual Meeting of the Association held at Belfast in that year and during the late Lord Aberdeen's Lord-Lieutenancy of Ireland. Her husband, who died five years ago, had been previously elected an Honorary Member of the British Medical Association at the Montreal Meeting in 1897, when he was Governor-General of Canada.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, April 27, at 8.30 p.m., when Sir Ambrose Woodall will read a paper on "The British Workmen's Compensation Acts."

The water supply to a borough in peace and emergency will be discussed at a meeting arranged by the Royal Sanitary Institute at Swindon Town Hall on Friday, April 28, at 5 p.m., when Mr. J. B. L. Thompson will read the opening paper, followed by Dr. Dunstan Brewer and others.

The Council of the Royal Sanitary Institute is again making arrangements to conduct a course of instruction in disinfestation work, which will begin on Tuesday, May 16, and will last for two weeks. Full particulars can be obtained from the secretary of the Institute, 90, Buckingham Palace Road, S.W.1.

The Conference on Vitamin E arranged by the Nutrition Panel of the Food Group of the Society of Chemical Industry is to be held to-day (Saturday, April 22) at the London School of Hygiene and Tropical Medicine, starting at 10.45 a.m.

A congress on cardiology will be held at Liége and Spa on May 27 to 29 under the presidency of Professor Dautrebande, president of the Belgian Society of Cardiology. Foreigners will be welcome. The subjects for discussion are the limits of electrocardiography, the clinical measurement of cardiac efficiency, and the coronary circulation. Further information may be obtained from the secretary, Dr. F. van Dooren, 80, Rue Mercelis, Brussels.

The next international congress for life insurance will be held in Paris under the presidency of Professor Loeper on May 18 to 21, when the following subjects will be discussed in their relation to life insurance: pulmonary tuberculosis, hyperthyroidism, obesity, chronic tobacco intoxication, albuminuria, and the value of statistics. Further information can be obtained from the general secretary, Dr. P. A. Carrie, 8, Rue de Belloy, Paris, 16e.

An exhibition of social progress will be held at Lille and Roubaix from May to October. The first group, which is devoted to public health, is divided into four classes, comprising respectively: campaign against disease, hospital equipment, the family, and social precautions. Further information can be obtained from the office of the exhibition, 17, Rue de Miromesnil, Paris.

Professor G. Grey Turner has been elected a foreign member of the Norwegian Medical Society in Oslo.

The Right Hon. Sir Auckland C. Geddes, P.C., G.C.M.G., K.C.B., M.B., has been appointed Regional Commissioner for the South-Eastern District of England, with headquarters at Tunbridge Wells, to direct civil defence on behalf of the Government in war-time. He and the other commissioners are nominated for three years from April 1.

The fifty-second Congress of the French Society of Ophthalmology will be held in Paris on May 8 to 11, when Dr. Coutela of Paris will read a paper on the eye and professional diseases. Further information can be obtained from the general secretary, Dr. Megigot de Treigny, 1, Square de Latour-Maubourg, Paris, 7e.

The meat content of sausages, a standard for ice cream, and artificial cream are some of the subjects to be dealt with in the discussion on the Food and Drugs Act, 1938, which will take place at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Tuesday, April 25, at 5 p.m. The discussion will be opened by Dr. C. F. White, Medical Officer of Health, City of London, and Mr. A. E. Bonham.

The month of April has been set aside for a nation-wide educational drive against cancer in the United States of America. In a broadcast from Washington entitled "Protect Your Best Years," Dr. Thomas Parran, Surgeon General of the United States Public Health Service, on April 3 emphasized that competent cancer treatment would increase fourfold a patient's chances of cure, and appealed for funds to promote research and build clinics and cancer centres. Dr. C. C. Little, managing director of the American Society for the Control of Cancer, paid a tribute to the work of the Women's Field Army against Cancer.

The Carey Coombs Memorial Fund has now been taken over by the University of Bristol and the permanent memorial will take the following form: (1) a prize to be known as the Carey Coombs Memorial Essay Prize, to be awarded every third year for an essay on cardiology or a similar subject, open to the British Empire; and (2) a memorial lecture on some medical subject to be given in Bristol every two years.

The assessors for the Heberden Lectureship and Medal have awarded the medal to Dr. Ernest Fletcher for his work on "Osteo-arthritis and its Association with Obesity and Hypertension." The lecture will be delivered on Tuesday, May 16, at 8.30 p.m., at the Medical Society of London, 11, Chandos Street, W. All medical practitioners who are interested are cordially invited to attend.

On April 1 President Roosevelt dedicated a new medical centre at Warm Springs, Georgia, to "crippled boys and girls all over the United States and other countries for generations to come."

The well-known surgeon Dr. de Quervain, professor of surgery at Berne, has recently retired from his chair on reaching the age limit.

Dr. Adolf Lorenz, emeritus professor of orthopaedic surgery at Vienna, celebrates his eighty-fifth birthday on April 21.

Dr. Barnet Stross has agreed to be nominated as prospective Labour candidate for the Hanley Division in succession to Mr. Arthur Hollins, M.P., who has announced that he does not intend to seek re-election to Parliament.

The largest and finest collection of comparative anatomy specimens in America, assembled by George Sumner Huntington, who was professor of anatomy at Columbia University's College of Physicians and Surgeons from 1890 until his death in 1925, has recently been presented to the Army Medical Museum in Washington.

The French Press announces the death of a hospital orderly, aged 49, who has died in Rouen after acting as a blood donor. He had been wounded and decorated for his war services, and had supplied blood 630 times for the transfusion service to which he was attached.

Medical Notes in Parliament

Parliament resumed its sittings on April 18, when the House of Commons discussed the recruitment of nurses and the problems of general unemployment. A report of the debate on the recruitment, training, and conditions of service of nurses will appear in our next issue.

EPIDEMIOLOGICAL NOTES

Infectious Diseases in England and Wales during March, 1939

In the five weeks ending April 1, 1939, 8,532 cases of scarlet fever, 4,924 cases of diphtheria, 6,407 cases of primary pneumonia, and 69 cases of enteric fever were notified in England and Wales. The notifications of scarlet fever, diphtheria, primary pneumonia, and enteric fever were 74 per cent., 85 per cent., 89 per cent., and 58 per cent. respectively of the expected numbers (deduced from the median values of the corresponding weeks of the years 1930–8).

Influenza, 1939

The latest reports indicate that influenza declined generally in the first fortnight of April throughout Europe and the United States of America. The outbreak was of a milder and less widespread character than were the three most serious epidemics observed during recent years—namely, those of 1928–9, 1932–3, and 1937. Although most of the countries of Western and Central Europe were affected, the progress of the epidemic was characterized by a series of sporadic outbreaks; for instance, in Northern England, Ireland, and Poland the peak of the epidemic was observed as early as the first half of January, in Scotland in the third week of January, and towards the end of the month in Hungary. The disease appeared in epidemic form in the first fortnight of February in Denmark, the Netherlands, Belgium, and Switzerland, and in the third week of this month in Germany and in Central and Western England and in Oslo; in Greater London during the last few days of February, and in the United States in the second week of March.

In the 126 great towns of England and Wales there were in the first twelve weeks of 1939, 2,664 deaths ascribed to influenza, compared with 7,000 in 1937, 10,000 in 1933, and 10,800 in 1932. The general death rate for these towns did not reach 16 per thousand during the first four weeks in January, 1939, as compared with about 18 during the corresponding period of 1937 and more than 20 during that of 1933. The number of cases of acute pneumonia reported in England during six out of the first twelve weeks in 1939 exceeded the median for the corresponding weeks of the years 1930–8.

In Germany during the first eleven weeks of the year deaths from influenza were 2,794, compared with 1,845 in 1937, but the figure was below that recorded for 1933. The general death rate between January 29 and February 25 was 15.6 per thousand, compared with 16.7 during the corresponding period of 1933. In the ten chief towns of Switzerland the general death rates during the first three four-week periods of the year were 11.5, 14.2, and 11.7 per thousand in 1939, compared with 11.1, 11.0, and 12.4 in the preceding year, and 11.1, 10.7, and 10.6 in 1937. The increase was largely due to the epidemic of influenza, chiefly in the towns of Basle, Berne, St. Gall, and Zurich during the month of February. In the U.S.A. the usual seasonal increase of influenza appeared in the second fortnight of February and reached its maximum with 18,135 cases in the second week of March. Although the general death rate in the towns for the four weeks ended March 11 remained below 15 per thousand it exceeded the mean for the previous three years.

No. 14

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 8, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns (125 in 1938) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)					1930–8 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	35	4	11	1	—	41	9	11	1	—		
Deaths		3	1				2	—				
Diphtheria	755	80	218	42	18	1,351	162	179	74	25	1,059	147
Deaths	18	3	6	2	1	44	7	4	3	1		
Dysentery	25	4	32		—	87	20	59		—		
Deaths				—	—			1	—	—		
Encephalitis lethargica, acute	3	—	1	2	—	9	—	—		—		
Deaths		—					—	—				
Enteric (typhoid and paratyphoid) fever	8	2	7	4	2	17	2	2	4	2	27	
Deaths	—	—	—	—	—	—	—	—	—	—		
Erysipelas			73	8	9			63	6	4		
Deaths		1					—	1				
Infective enteritis or diarrhoea under 2 years												
Deaths	41	10	9	3	4	50	14	6	1	2		
Measles		34	106		4			1,044		30		
Deaths	4	—	—	1	—	56	15	23	—	3		
Ophthalmia neonatorum	96	9	33		—	103	9	37		—		
Deaths												
Pneumonia, influenzal*	1,161	120	14	8	18	1,086	93	8	7	2	1,406	119
Deaths (from influenza)	149	26	6	1	2	56	8	3	—	2		
Pneumonia, primary			186	10				167	14			
Deaths		18		17	9		26		13	7		
Polio-encephalitis, acute	3	—				2	—					
Deaths		—					—					
Poliomyelitis, acute	3	—	—		—	5	—	—		—		
Deaths		—					—	—				
Puerperal fever	4†	4	10	1	—	5†	5	9	3	—		
Deaths		1‡					1‡					
Puerperal pyrexia	180	26	26		—	194	17	16		1		
Deaths												
Relapsing fever	—	—			—	—	—	—		—		
Deaths								—				
Scarlet fever	1,568	140	233	37	75	1,990	191	348	74	60	2,101	232
Deaths	5	1	—	1	—	5	—	2	1	—		
Small-pox	—	—	—		—	—	—	—		—		
Deaths	—	—		—	—	—	—	—	—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—	—	—	—	—	—		
Whooping-cough		364	298		33			42		4		
Deaths	24	4	9	2	2	20	3	2	2	1		
Deaths (0–1 year)	389	73	77	36	17	352	65	89	29	23		
Infant mortality rate (per 1,000 live births)	61	63				59	53					
Deaths (excluding stillbirths)	5,671	1,041	702	213	166	4,545	900	609	177	150		
Annual death rate (per 1,000 persons living)	13.9	13.3	14.2	14.3	14.6	11.2	11.3	12.4	12.0	13.3		
Live births	5,328	881	827	285	225	6,882	1,261	933	294	248		
Annual rate per 1,000 persons living	13.1	11.2	16.7	19.2	19.8	16.9	15.9	19.0	19.9	22.0		
Stillbirths	226	38	51			285	44					
Rate per 1,000 total births (including stillborn)	41	41	58			40	34					

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

‡ Death from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

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QUERIES AND ANSWERS

Pain in Disseminated Sclerosis

"A.B.C." asks for advice in the following case: The patient, a man aged 57, is suffering from disseminated sclerosis, definitely diagnosed as such some three years ago. The case has followed the usual course, with exacerbations and remissions, except that he has had an unusual amount of pain, which now troubles him more than the spasticity and other symptoms. He describes it as being "like a toothache," and it appears to be fairly generalized, except that the site of the most severe pain is always between the vertebral border of the scapula and the spine on either side, where there is also tenderness on deep pressure. A great many of the usual treatments for the condition have been tried, as well as some less commonly used, but none has effected any diminution in the pain except massage, and that only temporarily. He has been seen by several consultants, whose suggested treatments have not brought about any improvement in this symptom, except the advice that he should spend a fortnight in bed, at the end of which it was considerably relieved, but returned on getting up, although he rests the greater part of the day; he is, in fact, unable to sit up in a chair for any length of time without a great deal of pain. The ordinary simple analgesics have little effect, and I am naturally loth to use anything stronger.

Thumb-sucking

Dr. F. C. MOLL (Carmarthenshire) writes in reply to "A. N. F." (April 15, p. 808): The most satisfactory treatment in such a case is strapping the whole thumb completely with a couple of layers of good half-inch strapping; leave it on for a week and then remove. Should there be a recurrence of the thumb-sucking, reapply for a further period of a week, and by then, in my experience, the child should be cured.

Income Tax

Restriction of Life Assurance Relief

"BETA" inquires with regard to the restriction of the amount allowable to one-sixth of the total statutory income.

*** The words in the statute are "one-sixth of the total income of the person estimated in accordance with the provisions of the Income Tax Acts." Earned income is taken at the amount assessable—that is, after deducting expenses, but not, for example, "earned income" or "personal" relief—and income from property and dividends at the amount on which tax is payable. From the aggregate of the items of income there has to be deducted any mortgage interest, ground rent, or payments of that nature, and the one-sixth fraction is applied to the balance.

LETTERS, NOTES, ETC.

William Hunter's Coins

Professor G. GREY TURNER writes: Dr. Alfred Piney will find a delightful account of the "Hunter Coin Cabinet" in Volume I of the *Stevenson Catalogue of Coins.* It was written by Sir George Macdonald, the well-known authority on coins, who was president of the Numismatic Society in 1935, and reprinted for private circulation. The following quotation gives succinctly the main facts about what must have been a most wonderful and valuable collection: "Conspicuous among the London collectors was Dr. William Hunter, whose cabinet of coins and medals remains the finest ever got together by a private individual. Its trays contain about 30,000 specimens, of which over 12,000 are Greek and nearly the same number Roman. Nor is it on the ground of size alone that it is remarkable. For, extensively as he purchased, Hunter did not purchase at random. Many of the coins are of extreme rarity, some are absolutely unique, while the great majority are in exceptionally good condition. Their owner, as he more than once explicitly states, possessed no scientific knowledge of numismatics. But he kept himself constantly in touch with those who did, and availed himself of the advice of experts in all cases where the instinct of the amateur was likely to be at fault. He collected in the first instance 'for pleasure.' Being, however, a man of singular foresight and breadth of view in every department of intellectual life, he early became alive to the important part that coins might play in 'the illustration and confirmation of history.' The more fully he realized the exceptional opportunities for study afforded by a large collection, the more generously did he spend money and labour in the endeavour to make his own as complete as possible. Indeed, it is no exaggeration to say that he regarded the possession of his cabinet as a public trust, and its augmentation as a public duty. And when he bequeathed it in its entirety to the University of Glasgow it was because he believed that such a step was likely to lead to its resources being adequately utilized 'for the improvement of knowledge.'" As Hunter intended, it was eventually handed over to the University of Glasgow, where it now reposes.

Rectal Carcinoma in Young Girl

Dr. A. C. SCOTT (Kilmarnock) writes: The following case appears to me to be worthy of note. On March 17 I was consulted by a girl aged 16½, and found her to be suffering from a rectal carcinoma. She gave a history of having had "bowel trouble" for six months. Her family history is negative as regards the occurrence of malignant disease, the only feature being the fact that she is the seventh child in a family of ten, all born within eighteen years. This case was seen by Mr. Norman Davidson at the Victoria Infirmary, Glasgow, who agreed that it was a carcinoma and that it was inoperable.

Post-menopausal "Menstruation" induced by Stilboestrol

Dr. M. GHOSH (Burton-on-Trent) writes: The following case may be of interest as it demonstrates the action of stilboestrol in inducing what appears to be physiological menstruation in a woman of 60 who has not menstruated for the last ten years. She had suffered from a vaginal discharge, pruritus vulvae, headache, depression, and other functional disturbances for the last five years. Her periods stopped at the age of 50. Stilboestrol dipropionate in a dose of 5 mg. was given orally every day. The vaginal discharge and irritation stopped after four days. On the tenth day she had copious uterine haemorrhage. The administration of stilboestrol was then discontinued. The haemorrhage lasted for eight days. Examination did not reveal any other abnormality except a retroverted uterus. There has been a marked improvement in her mental outlook and functional symptoms.

Psychological Factors in Rheumatism

Dr. S. D. MITCHELL writes: In the *Journal* of April 8 (p. 744) is a report of a discussion at the St. John Clinic on psychological factors in rheumatic disorders. I should like to amend certain statements which I am incorrectly reported to have made. The psychiatric study of the personalities of patients with rheumatoid arthritis showed an excess of a type characterized by schizoid features, especially morbid anxiety. I was impressed by the frequency of emotional disturbance within one month of the onset of rheumatoid arthritis, not of arthritic conditions generally.